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Junior-Senior HIGH SCHOOL Clearing House

VISUAL EDUCATION

RALPH E. PICKETT, Chairman

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VOLUME V

DECEMBER, 1930

NUMBER 4

EDITORIAL

The term "visual education" takes its place in that long list of nomenclatures, the exact meanings of each of which have never been adequately defined or generally accepted. In common with many of these expressions, this term may mean to the man who uses it one thing, but may most likely mean something wholly or partly different to the listener. At least four different groups attach meanings to the expression which are peculiar to the workers in each group. The man in the street has one conception; the classroom teacher has another; the manufacturer of visual equipment has another; and the man whose major professional interest is in the educative side of visual methods and materials has still another.

In this number of the JUNIOR-SENIOR HIGH SCHOOL CLEARING HOUSE, an attempt has been made to bring before the readers at least three of these varying points of view in order that those who have not been unduly active in the field of visual education may have an opportunity to learn what others who have been active have discovered, to learn what they consider the possibilities and the limitations, and to learn what each one's conception is and how these conceptions differ among themselves. There are articles written by educators who have devoted considerable time to the practical utilization of visual aids under school conditions. There are articles by those whose major professional interest has been in this

field, as well as by those who have been able to derive a keen enjoyment from the hobby aspect of visual education. There are articles by manufacturers of equipment and materials in order that these same manufacturers may have an opportunity to set forth the claims for their materials in more extended form than can be done in the usual paid advertisement, and with a degree of clarity and accuracy in excess of that which the limitations of an advertisement permit.

The writer of this editorial hereby makes his acknowledgments to the many who have contributed to the success of this number. In particular, full credit must be given to John H. Shaver, to whose individual effort is due practically the entire labor, from an editorial standpoint, of this number. In the years during which he has been associated with the Jersey City school system, he has found time to study the possibilities in visual education, not only from the standpoint of an enthusiast, but also from the standpoint of the practical schoolman. He has had an opportunity to try out his theories and the theories of others under actual school conditions, and he has further had the opportunity to impart his knowledge to students in university classes in various aspects of visual education. Your editor's contribution has been confined almost wholly to the general planning of the form and the content of this number, with the exception of the article by Mr. Welling. The actual

details of the visual-education material have been carried out in their entirety by Mr. Shaver.

R. E. P.

VISUAL AIDS AND OTHER SENSORY SUPPLEMENTATIONS TO TEACHING METHODS

"What the eye sees, the mind will remember" is an old "saw" which has meaning for great numbers of people. For most adults are predominantly "visiles"; that is, they have, either by original nature or by long practice, greater ability to apprehend and assimilate experiences which they can see and examine visually than they have those experiences which they merely hear. The conventional school depends so largely on the spoken word and limits the visual impression to words and rather abstract diagrams and formulae as to fail to take advantage of the chief sensory means of learning—examination of models, pictures, and maps or charts or other representation, listening to the voice of the orator or actor and to the renditions of the artist, the tactual acquaintance with apparatus and relief models, the vicarious experiences of dramatization, and the actual contacts involved in field lessons or "trips."

The evils of verbalism, that words are symbols and are meaningless unless they stand to the pupil for images and ideas which he comprehends, demands the use of realien, by which experience may be real or at least vicariously stimulating. By these means an economy of time may be effected, instruction may be enriched and vitalized, and initial mental images may be correctly developed.

The introduction into the school of visual, auditory, and other sensory aids does not automatically cause all of these desirable conditions to come to pass, however. Unless the pupils are led to pay attention to particular points of importance, they may grasp little more than they would have done

from a printed page. The picture may contain a story and tell it effectively, but to one who sees only the total composition, the story may not reveal itself.

Dr. Knowlton has issued a warning which school principals and supervisors may do well to heed:

Some teachers and misguided enthusiasts have been under the misapprehension that if a school could equip its auditorium for the motion picture and its pupils could be herded there regularly to see them—such pictures for example as the better types of historical photoplays, or selected science films—the results would be so beneficial that they could fairly claim to have inaugurated a true visual program. A careful checking of such auditorium showings between groups which were seeing pictures in the auditorium in connection with the work of the classroom and those seeing them in the classroom, even though the same motivation was attempted, reveals such an advantage of the classroom type of projection over the auditorium that it raises serious doubts as to the wisdom of any considerable expenditure of school time in the auditorium if instructional results are sought. If this be true, then the school may well look to its practices, and be even more careful in taking the first steps in this field.

The teacher who makes no use of an effective textbook illustration or who seldom takes a bit of chalk in hand to illustrate her point on the blackboard, the teacher who gets along very comfortably, year in and year out, without a single historical map or wall chart, is not likely to make a very effective use of the motion picture. A teacher who seldom affords the child an opportunity to give expression to the workings of his imagination, crystallizing in some form the many images floating through his brain—either in words or in drawing—is not to be depended on to use projection apparatus effectively or to justify large expenditures for visual material.¹

In other aspects of sensory supplementation, the school has frequently faced similar disappointments. Sound motion pictures, the radio, graphophone, the laboratory, each has within it great potentialities for effective motivation for the encouragement of insight into technical and artistic and aesthetic experiences. But the mere inclusion of

¹ Daniel C. Knowlton, "Equipping for Visual Education," *The Junior-Senior High School Clearing House*, IV, December 1929, 4, pp. 198-202.

EDITORIAL

apparatus, indeed the mere use of the apparatus, is bound to be disappointing. One may learn to drive a motor car with the use of little intelligence but one cannot educate boys and girls unless he gives discriminating and reflective thought to what he is attempting to do and to the possible uses to which he may put his resources.

Test after test has indicated that laboratory experiences in science may be of little value; pupils are often bored by or soothed into a comatose condition by graphophone records, motion pictures, and the radio; pupils may look at stereographs or touch models, or visit factories and banks, or make trips to museums and parks without end and without appreciable benefit.

Each picture, model, map, musical selection, trip, dramatization, and laboratory experiment which the teacher would undertake must have one *major* and *immediate* purpose; marginal and incidental learnings will occur and if the major purpose is achieved it will not detract from the other desirable

learnings. If a picture illustrates the modifications in men's wearing apparel during the past century, then some preparation of the pupils is necessary which will make them conscious of and attentive to the differences which the picture will show. If the radio or graphophone selection is to indicate the effective use of the French horn or to illustrate Scottish bag-pipes, then the pupils must be prepared for what they are to hear. If the laboratory experiment is to illustrate a principle, then the significance of the principle must be understood in advance—how it has affected the individual civilization in which we live.

Which is to say that intelligence and discrimination are required in the use of supplementary teaching material, just as they are in all other walks of life. There is nothing automatic about learning, if by learning one means the intentional formation or modification of specific habits and knowledges.

P. W. L. C.

THE PLACE OF THE MOTION PICTURE IN A PROGRAM OF VISUAL INSTRUCTION

DANIEL C. KNOWLTON

EDITOR'S NOTE: Dr. Knowlton will be remembered for his contribution to the CLEARING HOUSE of December, 1929, and for his many investigations in the field of visual education. The accompanying article is based on his experience with the Yale Chronicles of America Photographs. He is now at New York University.

F. E. L.

It is unfortunate when a program of visual instruction is conceived as a series of motion-picture "shows." How different that is from the well-thought-out, cumulative effort to inject life and reality into instruction which characterizes the programs of such progressive visual-education centers as Newark, N. J., Cleveland, Ohio, and Kansas City, Mo. The purpose of such a program is to acquaint the child with life and its manifold activities with the most economical expenditure of time and effort. The emphasis is upon those creative aspects of the education of children which have be-

come the goal of all educational effort. Just what is the relation of the motion picture to such a program?

One reason why there are not more educational motion pictures available and a more general use made of existing educational films is that many schools have failed to lay an adequate foundation for this type of instruction. They have been content to confine themselves too closely to literary avenues of approach in making the necessary contacts between the subject matter of the curriculum and the child.

"The general public is usually several

jumps ahead of the teaching profession," says a recent writer in the *Educational Screen*. "One by one it has sent to the attic one type of visual aid after another. The public knows what gives it the greatest return in information for its money and it does not ask for diagnostic tests to prove it. . . ."

"One State at least has done with temporizing over the situation, and by September 1, 1927, every one of the 1200 first-grade high schools in Ohio will be required to have motion-picture equipment to hold their charters."¹ One implication to be drawn from this is that the schoolman must keep his ear to the ground for every new change of vogue in the visual field as reflected in theater or amusement palace. An announcement of the Fox Corporation that they propose to devote all their energies in the future to the making of talking films and the growing popularity of the "talkie" would make it incumbent upon the school not only to install a moving-picture machine but the much more expensive Movietone or Vitaphone or Phonofilm apparatus, as the case might be. The school problem is not to be solved merely by keeping abreast of the theater.

The theatrical motion picture is not designed to be educational. Its informational value is but a by-product. It amuses. It entertains. It is a "show." It will be still more of a show as it takes on its new rôle of a "talkie." A motion picture to serve the schools must recognize that the supreme aim of the school is instruction, not entertainment, and the motion picture must be as carefully adjusted to, and integrated with, the rest of the school program as is a bit of laboratory equipment. It is not as simple a problem as the physical transfer of a motion picture like "Chang" or "Grass"—good as they are—from the theater to the classroom. There must be a

place for these in that classroom—a place which has been carefully planned and anticipated. Otherwise the classroom is but an adjunct of, or a substitute for, the theater.

To begin with, the limitations of the classroom and the kind of work to be done there must be taken into consideration. There is a limited interval of time within which the teaching must be done. Twelve to thirteen minutes are required to show a single reel of approximately 1000 feet of film. This means that an educational picture cannot exceed three reels in length. The practice is in most cases to confine them to one or two-reel productions. They cannot therefore compete with the "feature" picture which is the main attraction of the theater, as the latter requires at least from six to eight reels, and sometimes twelve, to tell its story.

There are other important considerations, however, which determine the selection and use of a motion picture for educational purposes. The motion picture affords a glimpse of aspects of life not readily communicated through the printed page or the spoken word. This being true, children must be trained to look for these and must be readily able to apprehend these "visual" aspects and relate them to the great concepts involved. The child catches a glimpse of real life, almost a first-hand impression, even though we know that the stage has been carefully prepared beforehand. He looks out upon life. How different this is from the impressions conveyed by hearing or reading about it!

But the medium which enables him to do this is a combination of various types of visual aids, each potent in itself, each contributing effectively to the final result. What is the specific contribution of each type and of the combination of visual media? How shall we be sure that the child profits by them singly or in combination? In the

¹ *Educational Screen*, June 1927.

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photoplay "Dixie," there is an interesting sequence of striking situations—a succession of significant environments—joined together by snatches of dialogue and bits of explanatory matter. All of this is permeated with the semblance of life and motion. It is so full of detail and so rich in content that abundant opportunity must be afforded the pupil for the careful analysis which is only possible through the study of the flat picture or slide. Maps and diagrams and facsimiles of letters and documents are often combined with the photograph. How can their relation to the motion picture whole be evaluated—of which they are more or less integral parts—if they have never challenged the thinking of the pupil as so many different ways of mirroring specific aspects of the world about him? How can *projected* pictures be utilized to their full value if *unprojected* pictures have played no part in his efforts to master the great realm of knowledge?

Just as we learn to read the printed page so that its meaning may be apprehended readily, so in a very real way must we learn how to look at pictures. To begin with the most highly complicated form of the picture—the motion picture—is not only likely to be uneconomical but will probably be more or less ineffective. Photograph and print, map and diagram and the larger forms of these—the chart, wall map, and the projected picture—the drama, objects, actual environment itself, must all be analyzed in a definite well-conceived program of instruction if the motion picture is to play its proper rôle in our present educational scheme. There is no lack of material for such a program. The resources of great libraries and museums are at our command, to say nothing of the output of commercial houses.

From the standpoint of the far-reaching possibilities of the motion picture the need for such a program becomes more and more

evident. The spectator is carried at a speed exceeding that of the fastest airplane from one corner of the globe to another and back again. Whole chapters of human history are flashed upon the screen in a fraction of the time it would take to read about them. Centuries of time are reduced to minutes. Is it not reasonable to assume that the child who is to profit by these contacts must be so trained in the visual field that as map, diagram, or scene flits by he is ready to seize upon it and capitalize its possibilities?

The educational motion picture "Dixie"¹ which has been selected to illustrate the place of the motion picture in the schools is a photoplay or photodrama. In other words it belongs to the same family as the theatrical feature picture. It differs radically from the latter in purpose, content, and structure. It is one of a series of thirty-three motion pictures, each designed to be fitted into an instructional program in history at the point where such a picture may be expected to make the greatest possible contribution. "Dixie" is the last picture of the series and reveals plantation and home life in the South at the outbreak of the War between the States. It notes the effects of the war upon the life there. So transformed was Southern life by this cataclysm and by the events which succeeded it that when the picture was produced it was difficult to secure a natural setting for the action of the story. This phase of our history was selected by the film-makers because it is one which seems to demand as nearly as possible a first-hand glimpse of life on a Southern plantation, and the relation of the life there to the great struggle which divided into hostile camps neighbors and friends and even members of the same family. The heroic leaders in that struggle must be seen to be understood and appreciated, and Lee

¹ One of the Yale Chronicles of America Photoplays.

and Grant are revealed at that fateful moment at Appomattox Court House when an honorable peace closed the struggle. The deep significance of this may be lost upon the young pupil. This first glimpse of the "externals" of that scene, however, will lay foundations for an appreciation later on. The necessity for the projection of such a picture in an atmosphere in which the simpler forms of visual aids have been employed will be appreciated by an attempt on the part of the spectator to "take in" the picture in the time needed for its projection. He must bear in mind that the exigencies of the school program will probably mean but a single showing of the picture. So many interesting details of life appear here, many of them strange to the child, that it is folly to expect he will grasp them all as the result of once seeing the photoplay.

A certain familiarity with the simpler forms of visual aids will make for more satisfactory use of the photoplay by revealing clearly the structure of the motion picture and what may be expected of it. A photoplay may be resolved into at least four component parts. These are (1) the picture features; *i.e.*, the story told by the action of the characters; (2) the dialogue; (3) the continuity; *i.e.*, the explanatory matter which helps to carry the action other than the conversation of the characters; and (4) the inserts; *i.e.*, the flashbacks, facsimiles of letters, maps, and documents. These last are a form of explanatory matter bearing a somewhat different relation to the structure of the photoplay than that appearing as "continuity."

The pictorial material in "Dixie" is relatively large in comparison with what is carried in the explanatory matter and dialogue. It is essentially a picture record of what took place behind the Confederate lines and of the bearing of these happenings upon the

outcome of the conflict. It is important not only to inventory carefully this pictorial element, but to note its relation to "continuity" and dialogue. A succession of scenes is presented, each one designed to carry the student a little bit farther into the story and to unfold for him the disastrous sequence of happenings which largely account for the final denouement—the surrender of Appomattox. The opening caption serves to indicate the time, "The Spring of 1861," the place, "a plantation in South Carolina," and the fact that two belligerents were arming for a great conflict. The caption or continuity immediately focuses the attention upon one of them, the South. To prepare the pupil more adequately for the pictorial content, it is further noted that the story centers about a particular plantation, that of the Allan family, and the specific preparations there for the departure of the master.

The scene of these preparations and their exact nature and purport are presented largely through a succession of carefully staged pictures. As the different members of the Allan family come upon the scene the explanatory matter serves to identify them, supplying such pertinent facts as that the head of the family was a major and a Mexican War veteran, that of the three children Henry was the younger son, James the elder, and Mary the daughter. James was married and his wife's name was Ella. All, however, are brought upon the scene and become real personalities and can therefore be readily identified as the action proceeds.

The incidents associated with the opening episode, the departure for the front, are embodied almost altogether in picture form: the distress of the Major as he paces up and down the library in the presence of Mrs. Allan, who reflects by her attitude the gravity of the situation; the slaves hur-

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rying from their work in the fields to witness the departure of the master and to share in the enthusiasm of the moment; the dignified old butler in sharp contrast to the awkward, grinning field hands. All this and more are conveyed by picture with but two bits of dialogue, the one where Major Allan says to his wife, "The North is just as much in earnest as the South. We are the same people—and when we fight, we fight hard," and his toast, "Long live the Confederate States of America." (See figure 5. *Major Allan proposes a toast to the Confederacy from the verandah of the Great House on the eve of his departure for the front.*)

This response in the South to the call to arms constitutes the scene of the first act of a drama which is carried from scene to scene and from act to act largely by pictures, with here and there the interjection of a bit of dialogue to clarify the action. Such explanatory matter as is employed is used to introduce a new scene or prepare the spectator for a sudden transition from one set of incidents to another far removed in time or in space. The entire amount of such explanatory matter does not exceed 515 words or the equivalent of a page and a quarter of textual material. Again this explanatory matter, by its choice of words, is itself suggestive of the pictures which it would evoke or for which it definitely prepares the spectator. "Three terrible years" followed the departure of the Major and his comrades; a federal "ring of steel" was formed around the Confederacy during the interval; and the "worn" veterans of Lee's army were "fighting against odds" and "living on half rations." This effective use of language as a supplement to the picture is further illustrated by such adjectives and phrases as "reluctantly," "imperilled home," "fire and sword sweeping exposed portions of the Confederacy," "trying journey," "stealing along," "gath-

ering shadows," "desperate struggle," "amid a circle of Federal bayonets," "living on parched corn," etc., etc.

The use of dialogue represents the same care in the selection of words and phrases, the effort being to incorporate a maximum of meaning and significance into these utterances and to relate them most effectively to the pictorial portions of the picture. Dialogue as used in this connection almost has the force of the spoken drama. It demands a more careful appraisal and analysis because of its comparatively sparing use.

Through the "close-up" the photoplay also introduces the equivalent of the objects themselves, if the teacher were to attempt to make use of these in the classroom in the same effective way. How vividly the past is recalled as the pupil sees the American telegraph blank with its fatal message, "Your brother James was killed," etc.; and a little later that epoch-making piece of paper with its famous lines in the handwriting of General Grant, "This will not embrace the side-arms of the officers," etc., and the replica of the actual sword of General Lee. (See figure 6. *Scene in the McLean house, where General Grant is presenting General Lee with the terms of the surrender.*) Something of the impression which these made upon their contemporaries is communicated to the pupil as they are flashed upon the screen in a pictorial setting of reality and power.

The most careful analysis of such a photoplay is therefore necessary if the teacher would fully realize the value of the instrument which she is to employ and the contribution of which it is capable. The teacher should carry this analysis not only to the point of recognizing how much is conveyed by the various "forms of communication" used, but so that the photoplay as a whole represents a series of acts and scenes in a drama, or the chapters in a thrilling narrative which grips the reader more and more

as he draws nearer to its close. The teacher must feel the movement and the drama even before the photoplay is screened.

There is this, however, to be remembered about the power of children to grasp the details of a motion picture. Normally they "see" more than do adults. Nothing escapes them except with this difference: Their seeing does not carry with it that appreciation of detail which is more characteristic of the adult and which is so much needed if the picture is to make a substantial contribution to knowledge. Details must be seen in their relationship to the whole. If the teacher on the one hand, and the pupil on the other, are to lay hold of the significant, larger aspects of a picture, both must have accustomed themselves to the use in more elementary form of this teaching aid. The pupil may see so many things in a motion picture that the total result is confusing and unsatisfactory. If the teacher's experience with visual aids is limited and she relies mainly upon the techniques applicable to the printed page, she is not likely to handle visual material effec-

tively. She will prove of slight assistance to her pupils in enabling them to find their way about in this strange domain. She will probably attempt to accomplish through the picture what might better be done with other media. The result will be disappointing and the use of the motion picture will tend to take on more and more the nature of a "show."

The motion picture is entitled to a large and important place in the instructional program, but this place will be properly filled only when teachers and school administrators show a greater confidence in the effectiveness of the visual approach to learning by insisting upon the wider use of the picture, slide, map, stereograph, field trip, and similar aids.

To utilize the full potentiality of the historical motion picture as an economical and effective instrument in the classroom, history instruction must take on a more visual aspect. Educators must have confidence in the visualization process, and strive constantly to develop a true visual method.

EDUCATING THE TWENTIETH-CENTURY YOUTH

ANNA VERONA DORRIS

EDITOR'S NOTE: Many are insisting that the schools keep pace with the changing social order. Mrs. Dorris believes that visual aids are necessary to arouse the curiosity and interest of children. She is director of visual instruction, State Teachers College, San Francisco, California, and will be remembered as the author of Visual Instruction in the Public Schools.

F. E. L.

Educating the twentieth-century youth. What a colossal undertaking! Yet, that is the task of every public-school teacher today. It matters not whether the teacher is

serving in the elementary, junior high, senior high, or college. We must recognize that this twentieth-century age with all its magical scientific achievements has revolu-

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tionized life and living. Change, change, everything has changed—is constantly changing the world over. Nothing is the same as “yesterday.” A new civilization has dawned; new problems confront us; a new type of youth with different standards, with different ideals, and with different ambitions greets us here, there, and everywhere. What does all this mean—a new era, a new youth, a new type of citizenship? It means that the public school has found it necessary to revolutionize, not only its curriculum, but its whole teaching procedure. Each period in the progress of civilization brings forth new and better means of solving its social and economic problems. Therefore, subject matter and methods of instruction must keep pace with this progress in order to be adapted always to the specific needs of contemporary living.

The youth of today must be trained for a broader, richer life. He must be trained to see with twentieth-century eyes, to think with a twentieth-century mind, and to work with twentieth-century tools and methods.

THE SCHOOL'S PROBLEMS AND PROCEDURE

Our civilization can rise no higher than our educational system. The whole future of American civilization depends on *what* is taught, and *how* it is taught in our educational institutions from now on. Never was the situation more critical than today due to the serious transitional period which we are now experiencing and which has caused such upheaval and inharmony throughout the whole wide world, especially in Asiatic countries. The educator's *first* concern, then, is to determine *what* to teach the modern youth—what subject matter or knowledge is needed by an individual to function as a wholesome, efficient world citizen today. Second: The teacher must then determine what is the most effective, the most economical means of presenting such subject matter to the modern student.

And, I emphasize, upon the *how* we teach—pedagogical procedure—depends not only the efficiency of learning, but also, to a great degree, the mental, moral, physical—nay, even the spiritual—growth of the individual.

This new age demands more effective, more concrete, more interesting methods of presenting subject matter. The old teaching methods were more or less formal and bookish, often merely lesson-learning—merely memorizing of facts for facts' sake, quite meaningless to the average child. School life was too often an unhappy depressing experience to most children. School life *can* and *should* be a happy interesting experience for all types of children and at the same time be thoroughly efficient and practical in training. We cannot force any individual to learn. We may force committing to memory, but true education is a growth from within and involves understanding—enlightenment. Students must feel the need and want to learn in order that desired results may be attained. What is the secret of modern teaching, then? Interest is the key to knowledge. Therefore, interesting scientific methods of procedure must form the basis of effective teaching today.

NEW METHODS DEMAND NEW TOOLS

This complex age has brought serious new problems to the school and society, but likewise science has developed new educational tools with which to solve these problems. The stereograph, the stereopticon slide, the motion picture, and the radio have found a definite place and are rendering invaluable service in all the more progressive schools of the country. When such modern devices are common and necessary in the home, the church, and the business world, and have actually become a part of life itself, the school as a social institution cannot properly content itself with obsolete methods

and antiquated equipment and expect to attain any satisfactory degree of efficiency in training boys and girls to meet the problems of current life.

Children no longer sit quietly all day studying facts about things from one textbook. They read broadly, see things, handle things, and do things. Every lesson is made, or should be made, a real experience to the child through the use of pictures, exhibits, re-creating historical situations through dramatization, making charts and graphs or building models of canal locks, or reproducing a miniature Nile Valley in a sand table. Here these children are gaining the right habits, attitudes, and skills while they are gaining useful knowledge. Long ago we realized the folly of assigning lessons by pages. Today the progressive teacher breaks up the subject matter into units and important problems. Individuals and social groups in the modern classroom attack their problems in the same manner that the adult does in life. They learn how to study, how to use many books, how to organize subject matter, how to use tools in solving problems, and how to cooperate and work with others. Mere information is only a meager part of a child's education.

To illustrate, a grammar-grade class was ready to study the geography and history of Egypt. Instead of assigning a half page in the geography textbook, the pupils and teacher worked out for special research work a series of problems such as "Why has the Nile Valley been a home for millions of peoples for so many thousands of years?" "Why were the pyramids of Egypt built?" "Why is the camel better adapted for desert traveling than any other animal?"

Each day a new problem was written on the board with a list of page references in the textbooks, supplementary readers, and Compton's Pictured Encyclopedia.

THE MODERN CLASSROOM BECOMES A RESEARCH LABORATORY

It is self-evident that the problems in hand demanded thinking and logical reasoning on the part of every child. There was now a purpose, a motive, for studying books: to satisfy that longing to know why, how, when, and the where of things.

To arouse further curiosity and interest, the teacher projected a few beautifully colored slides on the screen.

These students studied from books, exhibits, stereographs, and other pictures. Some made maps and graphic charts on paper or slide cover glass for projection. One group was busy creating a miniature Nile Valley on a long sand table. Alexandria, Cairo, Luxor, Assuan, pyramids, all appeared in proper place along the green borders of the river. Two boys worked in the school library selecting stereopticon slides with which to illustrate special reports to be given to the whole group. Frequently these problems involve days of study both in school and out of school.

There is not a subject in the curriculum that cannot be made more interesting and meaningful to students by a sane and proper use of visual materials. In the upper-division classes, in high schools, and colleges the exhibit, the graphic chart, the stereopticon slide (particularly the handmade slide), and the motion picture are indispensable in solving problems in the social studies, and the natural and physical sciences.

Why talk *about* and read *about* such problems as traffic through the Panama Canal, for instance, when students have no mental concept of what the canal looks like or how the great locks work? Why not give them the visual experience first—through the medium of colored slides or a reel of motion pictures—so they may acquire true mental concepts of the Gatun Locks, for example, and the canal zone in general.

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Then interest is stimulated which will lead to intelligent research and wide use of books.

Likewise, in studying the government of the United States, if students could see Washington, visit the Capitol, the Senate, and House chambers while they are in session, they could get a clear concept, through a good motion picture or even slides, of actual situations as they really exist. Then probably civic courses in junior high school would not be such a nightmare to some students.

One of the most serious problems confronting educators today is education for world peace. Surely no harmony or peace can come to this commercialized, interdependent world of ours until citizens in general have acquired an international consciousness, a sympathetic understanding, and an appreciation of the peoples of the world with whom we come in contact socially, politically, and commercially. How woefully ignorant the average citizen is of world geography and contemporary civilizations, especially those of Europe and the great awakening nations of Asia. The school's problem is: How can we develop in the hearts and minds of every American youth a deep sympathetic understanding of the peoples of the world? Surely effective results cannot be gained through books alone; they have their place, but the printed page must be enriched with the wealth of visual material which this scientific age has developed for our use. Through the perfection of modern photography, particularly the stereograph with its illusion of a third dimension which seems to transport one into the pictured situation, or the motion picture with its appealing quality of movement, a concrete knowledge of life and the world we live in is revealed in such a realistic way that it is understood by any child or adult alike.

Through these pictorial experiences stu-

dents are transported mentally to the remotest corners of the globe. They may penetrate the frozen regions of the far north, and actually live—in imagination—with the Eskimo and his interesting family. Again through this same medium they may visit India, Japan, or China and not only study first hand the geography of the countries, but they may visit homes, schools, factories, or ancient palaces and temples. In other words, through these magic devices every student may see for himself how our foreign neighbors work and play; how they actually live day by day. Such concrete fascinating experiences could never be gained from the printed page.

HISTORY IS REVIVIFIED

Through these effective twentieth-century teaching aids history is revived, and old and young may relive the great events of the past. The motion picture is destined to play a most important part in the future teaching of history. It is the only visual aid that has the power to portray truthfully the activities and processes of which all history is composed. Both old and young must see and feel human experiences in order fully to appreciate and understand their significance. The events that took place during the Revolutionary War are usually uninteresting and meaningless to boys and girls, but actually to see General Washington and his brave soldiers suffering during that terrible winter at Valley Forge¹ makes a deep and lasting impression on any mind. Questions naturally come up concerning the cause of such suffering and endurance and the effect on the development of our national history.

To study with undivided attention parts of such a film as "The Covered Wagon," to live mentally with those early pioneers crossing barren plains and rough mountains in their cumbersome vehicles, to witness their courage in fording dangerous streams

¹Chronicles of America, by Yale University Press.

and in repelling the frequent attacks of scalp-seeking Indians as they forced their way onward seeking new homes in the West certainly reveals more true information and leaves deeper impressions regarding westward migration than any printed page can give.

Likewise students may not only read of the great personality of Lincoln, but actually see him as a youth, as a great statesman, see him walking, talking, suffering, even dying a martyr that a great people might be free. Such vivid experiences stir emo-

tions to the very depths. We suffer, we rejoice, we are filled with patriotic love of our country, and the deep and lasting impressions made cannot but affect for the better every individual's thinking, feeling, and acting. Emotional life is stronger than the intellectual. Realistic pictures not only compel us to see, but to feel and feel deeply. Indeed, the proper use of visual materials in the teaching process not only brings vividness where before there was only vagueness, but it also enriches the mind and heart.

WHY WE SHOULD USE PICTURES IN TEACHING

J. E. HANSEN

EDITOR'S NOTE: Mr. Hansen is chief of the Bureau of Visual Instruction, Extension Division, University of Wisconsin. His article is summarized in the following words: "When the possibility of the picture, be it the photograph or the screen picture—still or moving—is more fully realized and exploited, then will all teachers, realizing its value, feel its need."

F. E. L.

There is no longer any question about the value of pictures in classroom teaching. Experiments carried out by Dr. Joseph J. Weber, Dr. Daniel C. Knowlton, and others, as well as the nation-wide experiment directed by Professors Wood and Freeman prove conclusively that pictures do vitalize and enrich the curriculum, and are, therefore, needed as aids to teaching.

Dr. Weber¹ in different studies in different elementary grades found that lessons aided with stereographs and lantern slides produced marked gains in measurable acquired knowledge over the unaided lessons. A very significant fact brought out in the studies of Dr. Weber and others is that visual aids are more beneficial to pupils with low intelligence quotients; or, in other words, that the more limited the intellectual capacity of pupils, the greater is the need for visual aids in their instruction. This is true also for the pupils who lack experience. It is obvious that the child who has

never traveled and whose home environment is not conducive to learning, regardless of what his intellectual capacity may be, will have greater need for a liberal use of visual aids in his learning than the more favored child.

The results of the vast and comprehensive experiment sponsored by the Eastman Teaching Films under the direction of Professors Wood and Freeman² prove the value of motion-picture films in the learning process. The three questions which the experimenters set out to answer, namely, "(1) Can motion-picture films be produced which are correlated with standard courses of study? (2) Can the teaching value of the films be measured? (3) Is the value of the service of the films sufficient to justify the required expenditure to make them available to schools?" were answered decisively in the affirmative. Comprehensive tests given at the close of the experiment showed that in each of the twelve cities where the films were used the groups having the bene-

¹ (a) *Picture Values in Education*; (b) *Comparative Effectiveness of Some Visual Aids in Seventh-Grade Instruction*; (c) *Visual Aids in Education*. (Chicago: Educational Screen, 1928.)

² *Motion Pictures in the Classroom*. (New York: Houghton Mifflin Company, 1929.)

WHY WE SHOULD USE PICTURES IN TEACHING

fit of the films had made marked gains over the pupils who had not used the films. In addition, contributions were made by the films which no written test could measure. Marginal impressions, not revealed by the tests, enriched the topic treated, and also enriched the incidental experience of the pupils. As Professors Wood and Freeman say: "Each film afforded opportunities for the translation of visual impressions into verbal forms of expression that carry a quality of meaning far richer and more integrated than the meanings acquired through verbal impressions alone. It is probable that in the film groups visual impressions were constantly in advance of the facility for expression, whereas in the nonfilm classes, instructed more largely through verbal forms, facility in expression may have tended to outrun the acquisition of meanings based upon experience with reality."

The testimony of the teachers also shows that the films stimulated an interest in the subject and induced pupils to more reading and research work. The pupils who had the benefit of the films were always reluctant to leave the study of a topic while the pupils who had not seen the films were nearly always eager to begin something new.³

It ought not to be necessary to argue the value of pictures as aids in learning today, but, judging by the large percentage of our teachers—yes, the many, many schools—who have never employed stereographs, lantern slides, or educational motion pictures in their classrooms, there must be many teachers and school administrators who do not believe that pictures in their various forms do vitalize classroom teaching. It is to the teachers and administrators who do not believe and who are indifferent that these words are addressed.

³ This paragraph and part of the preceding paragraph adapted from *Motion Pictures in the Classroom*.

It is safe to say that every course in the elementary school, the junior high school, and the senior-high curricula should include some well-chosen pictures and other illustrative materials. We adults who have a world of experience as a background, we who have travelled much and seen much of the world are prone to underestimate the lack of experience on the part of our pupils. We are often discouraged and disgusted with our pupils because they do not respond to our efforts as we think they should—because they show no interest in the content of the printed page and are not enthralled by the meaningless and monotonous symbols which they see there. A teacher may, through the very force or the attractiveness of her personality, hold the apparent attention of her pupils only to find that they have failed to grasp the very ideas which she has tried to impart. But every observant teacher has seen the eyes of even the dulllest dullard brighten and his whole consciousness quicken when in the course of his otherwise idle gazing through his textbook he has come across some description, some narrative, or some illustration with which he has had sufficient concrete acquaintance to be able to visualize.

I shall never forget my first experience in a rural school in a backward settlement in our State. Most of my pupils came from the homes of foreigners and few of them had ever been outside of their own immediate community. About the only literature found in any of their homes was a semiweekly or daily paper—and the newspapers of those days were poorly illustrated. The nearest city was miles away and many of the children had never seen movies—trashy as they were in those days. The few illustrations in their textbooks were poor in quality, lacking in detail, and of little significance. Teaching these boys and girls seemed a hopeless task. I gave up in despair and hoped only to maintain satisfac-

tory discipline to enable me to remain till the end of the year. In a seventh-grade class we were attempting to read *Evangeline*, but little interest was evidenced by the pupils. By chance I happened upon a back number of the *Travel* magazine containing a fine lot of pictures of the Evangeline country, both Acadia and Louisiana. I brought this to my class in hopes that the pictures might add a little something to our study. I was surprised and overjoyed at the eagerness with which the children seized upon the pictures and how the study of the pictures quickened their interest in the story. When I realized how intensely interested they had become I subscribed for such magazines as the *National Geographic*, *Asia*, *Travel*, and others. I secured back numbers of these and others, particularly such as were well illustrated. Not having studied much in psychology and knowing little of the learning process I did not know that I was but supplying the experiences that these pupils needed to enable them to visualize the printed page and the spoken word of the teachers.

I did not realize that it is impossible to convey to others ideas by means of written or spoken symbols unless these people have had the background of experiences, the sensory experiences, necessary to interpret these symbols—for words, spoken or written, are but symbols.

That experience was an extreme case but one can go into classroom after classroom and school after school today where field trips are never made and where the only pictures the pupils see are those in their textbooks—and many teachers fail even to call their attention to them. Prospective teachers are being graduated from our universities and other teacher-training institutions without ever having been exposed to the more effective visual aids, such as lantern slides, motion-picture films, or stereographs, and without any sense of the neces-

sity for furnishing their pupils with the vicarious experiences which can hardly be had through any other medium than pictures, be they mounted photographs, stereographs, or screen pictures. Certainly no teacher ought to go out to teach who does not realize the value of pictures—yes, the absolute need for pictures in classroom teaching. Teachers ought to be trained in the technique of teaching with the aid of pictures, particularly screen pictures such as lantern slides and motion pictures. Blackboard drawings, charts, and mounted pictures are also valuable, but, in general, teachers are better acquainted with their use. Teachers ought to be trained to operate the various types of projectors for the showing of screen pictures. And, certainly, teachers should know the sources of visual-aid materials.

Obviously the need for pictures is greatest in the earlier years of school life. It is here that the pupil needs to build up a rich store of visualizations not alone for his present needs but for the future. The pupil's ability to comprehend the printed page or the spoken word is proportionate to the relevant experience which he can bring to bear. Many of our words have their roots in sensory experiences and the words are merely symbols which represent these experiences. Psychologists agree that a large proportion of these sensory experiences are visual in their origin. It behooves us, then, as teachers to supply these experiences. Before the development of graphic representation, learning dependent on visual experiences could grow out of actual experience only. The impossibility of giving pupils the actual experiences needed in the learning process has resulted in the present evil of verbalism. Although the various forms of graphic representation, such as blackboard drawings, charts, etc., have great value and should be fully utilized, the invention and perfection of photography has

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placed in the hands of the teacher the greatest means of providing her pupils with visual experiences—not real experiences, to be sure, but vicarious experiences. The nearness with which these vicarious experiences approach real experiences in value is dependent upon the photographic quality, the truthfulness, and the significance of the pictures used.

In the field of botany, zoölogy, and health, we can have the life processes shown before our very eyes in a way that cannot be shown by any other means than the motion picture. Screen pictures, be they still or moving, can bring into the classroom objects too far distant, or too small, or too large, or too rare, or too expensive or dangerous or otherwise unsuited for direct classroom instruction. Rapid processes can

be slowed down and analyzed. Processes, otherwise too slow, can be accelerated, and inanimate objects can, by the means of the animated drawing, be made to move. We can by the means of motion microphotography show microscopic life on the screen where it can be viewed by a whole class. In the study of geography the screen picture can transport your boys and girls to the scenes of their study where they may live among the native people and in the environment that has made these natives what they are.

When the possibilities of the picture, be it the photograph or the screen picture—still or moving—are more fully realized and exploited, then will all teachers, realizing its value, feel its need.

THE ADMINISTRATION OF VISUAL INSTRUCTION IN THE PUBLIC SCHOOLS

FREDERICK DEAN MCCLUSKY

EDITOR'S NOTE: Mr. McClusky, director of Scarborough School, Scarborough-on-Hudson, New York, is president of the National Academy of Visual Instruction. In the following article he indicates how many administrative phases of visual education are handled in representative school systems.

F. E. L.

Thirty years ago visual instruction was thought to be a luxury because many of its materials were scarce and expensive. Today the situation is reversed. Modern photography has given us a tool with which we can bring the world into the classroom. Newspapers and magazines print thousands of pictures about every phase of modern life. A child or teacher with a pair of scissors and a collection of periodicals has immediate command over a wealth of pictured material. Many school textbooks devote one fourth to one third of their space to pictures. An expenditure of a few hundred dollars brings hundreds of slides, stereoscopic views, and moving pictures into the schoolroom. Visualization is no longer a luxury.

One would expect that the abundance of

visual materials available for school use would result in (1) the centralization of these materials, and (2) considerable agitation for the increased range of their serviceability. Hence, it is not surprising to find that there are throughout the country today no fewer than twenty-three universities, thirty-four city school systems, two State museums, fifteen city museums, libraries, and art institutes, and four State departments of education which have organized bureaus to collect and to distribute the materials of visual instruction, whereas fifteen years ago few bureaus of this nature were in existence.

THREE MOVEMENTS TOWARDS CENTRALIZATION

A study of the development of organized visual education shows three distinct phases.

The first may be labeled the "school museum movement." A number of tax-supported and privately endowed museums, libraries, and art institutes began early in the twentieth century to set up separate departments for extension work in the schools. The largest number of such departments to be established appears to have been in the decade 1905-1914. That the school museums attracted attention is attested to by the appearance of chapters on the "Educational Work of American Museums" in the annual reports of the United States Commissioner of Education for 1913, 1914, 1915, and 1916; and by the appropriation of \$17,000 in 1923 by the General Education Board for a study of the educational work of American museums.

The second phase may be characterized as the "university extension movement." The peak of this development appears in the quintad 1915-1919 because in 1919 the visual-education division of the United States Bureau of Education deposited over one hundred reels of motion-picture film in each of twenty-odd extension departments of education.

The third phase in the development of organized visual education has been the establishment of bureaus in city school systems. Soon after the establishment of the public-school museums mentioned previously, the Chicago school system organized a visual-education bureau. The history of the creation of the Chicago bureau is of interest. Ten principals of the Chicago public schools organized about 1895 a projection club, contributing \$25.00 each towards a fund to purchase lantern slides for their schools. Each school purchased its own stereopticon. The work of this club grew to such an extent by 1917 that an arrangement was consummated¹ whereby the school board assumed responsibility for visual instruction, took over the equipment

of the club, and placed it in the hands of a visual-education department. Following the establishment of the Chicago bureau in 1917, Newark, Detroit, Kansas City, Pittsburgh, Los Angeles, New York, Atlanta, Berkeley, Buffalo, Philadelphia,² Indianapolis, Toledo, Washington, Birmingham, Oakland, and other cities organized departments of visual instruction. Each year finds new names added to the growing list of city school systems with departments of visual instruction. The value of organized visual instruction in public schools has been sufficient to cause the National Education Association to establish a Department of Visual Education. Ardent advocates of visualization predict an extended growth of visual education in the public-school field for the peak of this movement does not appear to have been attained.

THE STAFF OF BUREAUS IN CITY SCHOOLS

The directors of departments of visual education in the large city school systems are individuals with long school experience. In most cases they received appointment because of their success in handling visual aids as teachers, principals, or supervisors. In fact, most of them developed their interest and carried forward the work of visual education without much encouragement or financial assistance. This situation is to be found in several cities where those in charge of visual education are carrying the full burden of a growing department on the left shoulder and other equally important duties on the right shoulder.

DIRECTORS OF VISUAL EDUCATION HAVE MANY RESPONSIBILITIES

The major duties of a director of visual education may be listed as follows: (1) he must keep in touch with the sources of new material; (2) he must wisely select, construct, or reconstruct material with reference to its place in the curriculum and

¹ Sixty-fourth Annual Report of the Board of Education, City of Chicago, June 30, 1919, pp. 121-122.

² The slide library circulated under the direction of the pedagogical library of Philadelphia was in use before 1915.

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arrange for its classification and entry into a catalogue; (3) he must interview teachers, principals, and others who wish to consult him with respect to visual aids; (4) he must administer the routine of his department, making certain that orders are filled with dispatch and smoothness, that records are kept, and that materials are sent out in good condition; (5) he must follow up breakage and delays in transportation; (6) he must supervise the use that is being made of the material; (7) he must help teachers and others plan special exhibits; (8) he must make tabular studies of the extent of service; (9) he must arrange for the proper advertisement of available material in terms of catalogues, lists, and the like; (10) he must prepare carefully worded rules and regulations covering the use of materials which will conform to local ordinances, school-board regulations, and other laws affecting their use; (11) he must prepare or arrange for the preparation of lesson plans, digests, lectures, and other teaching helps to accompany the exhibits, slides, pictures, films, and other visual aids; and (12) he must render a report at stated intervals to his superiors.

While the above list of duties and activities is not exhaustive, it gives a fair picture of the activities of the leaders of visualization. The list also serves to call attention to the training required for such leadership. Hence it is apparent that directors of visual education in city school systems would find it desirable to have (1) thorough experience and training in the technique of teaching; (2) experience and training in educational administration and supervision; (3) training in the art and science of photography and training in making slides, charts, and posters in order to judge more intelligently the quality of the material proposed for collections; (4) training in the preparation and care of museum exhibits; (5) knowledge in handling projection ap-

paratus and other mechanical appliances commonly used in visual education; (6) training in handling people; and (7) training and experience in preparing catalogues, reports, etc., in which the work of the department is described.

The assistant directors have a variety of duties. In a number of cities the assistant director has charge of the preparation of lecture notes, syllabi, outlines, and other teacher's aids sent out with the slides, films, or exhibits. Not infrequently the assistant director is in charge of certain special projects which are being conducted under the direction of the department. Again, in those cities where the director's energies are divided, the assistant director carries a considerable share of the actual responsibility for either one or the other division of the department's major activities. For example, in the Pittsburgh Department of "Nature Study and Visualization," the assistant director has carried a considerable portion of work in nature study. This left the director free to carry more of the responsibilities of visual education. On the other hand, in the New York City Department of "Lectures and Visual Instruction," the assistant director has been responsible for a large portion of the work in visual education. On the whole, however, the assistant director does all that the title implies by assisting the director in the actual administration of the department bureau.

The stenographers and clerks are responsible for the routine activities of the bureau. They type outlines, mimeograph lecture notes, check materials in and out, inspect films, slides, and exhibits, mount pictures, keep records, pack and unpack exhibits, repair broken materials, and so on.

The chauffeur is responsible for (1) the care and upkeep of the truck, and (2) the regularity and dependability of delivery service. The operator acts as trainer for

students or teachers who learn to run a projector or stereopticon. Often the operator is in sole charge of all projection himself. He also looks after the projection apparatus and films, keeping them in repair and good usable condition. Sometimes it has been found desirable to combine the lecturer and operator in one person.

The above description of the personnel is sufficient to give one a picture of the major activities of the staff. Each city department presents a different twist to the situation and no hard and fast line can be drawn which marks off the duties of the various members of the staff. This divergence of practice can be explained by the recent origin and development of these city visual-education departments. The bureaus have been so busy trying to get under way that they have had little time to observe the practices of others.

THE COST OF VISUAL EDUCATION

A second point we shall study to show the present status of visual education is the cost of operating and maintaining these departments of visual education. A survey recently conducted under the auspices of the National Academy of Visual Instruction has disclosed the fact that over three millions of dollars have been spent for visual education during the past seven years by the public-school bureaus in fourteen of the largest cities in the United States. During the school year 1922-1923 the annual expenditure of these fourteen cities was three hundred seventy thousand dollars. This sum has increased annually so that over six hundred thousand dollars was expended this past school year, 1929-1930. The cities included in the study were New York, Chicago, Philadelphia, Detroit, Pittsburgh, St. Louis, Cleveland, Kansas City, Buffalo, Atlanta, Newark, Oakland, Reading, and Berkeley.

The survey also included the visual-in-

struction activities in twenty smaller cities where the work is not so highly organized. The public schools in these twenty cities have spent a half million dollars during the past seven years and have expended one hundred twenty-two thousand dollars during the past school year. It was also found that twenty-three State bureaus of visual instruction, located for the most part in the State universities, have made an investment of one million five hundred thousand dollars during the seven-year period. The State bureaus have spent from one hundred ninety thousand to two hundred seventy thousand dollars annually.

The sum total of expenditures for visual instruction in the public schools for thirty-four cities and twenty-three States during the period from 1923 to 1930 was over five millions of dollars.

The way in which this money is being spent in the large cities is of interest. The salaries of those employed in the bureaus account for fifty-one per cent. Another thirty-eight per cent goes to the purchase of new materials such as motion pictures, stereopticon slides, projection apparatus, stereographs, exhibits, etc. Operating expenses take the remainder. The bureaus in the larger cities have accumulated equipment valued at three hundred thousand dollars. The State bureaus own six hundred thousand dollars worth of materials and equipment. While much of this material is semipermanent—films wear out, slides break, stuffed birds become moth-eaten—the point is that the bureaus are fast becoming vast museums of great value and of educational importance.

Pittsburgh, Los Angeles, Detroit, and St. Louis are outstanding in the work of visual education. Their budgets this past year called for expenditures ranging from sixty thousand to one hundred ten thousand dollars.

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METHODS AND THE EXTENT OF THE DISTRIBUTION OF VISUAL MATERIALS

Up to this point in our discussion we have enumerated various facts concerning the administration of visual education in terms of the development of departments of visual education, of the personnel of these departments, and of their expenditures. We shall continue our discussion by describing the administrative methods of distributing visual aids.

The distribution of moving pictures— There are two general methods which have been adopted for the distribution of films throughout the school system by city school departments of visual education. The first we may call the "circuit" method, and the second the "special-order" method. Each of these two methods, while quite distinct in purpose and operation, are varied in practice, and in certain cases both methods are used in the same departments. The circuit method of distributing films may be described in this fashion. A department places a number of schools on a "circuit." The film is then taken from school to school until it has been to each school on the circuit. This service is continued so that each school receives regular service at regular intervals throughout the school year. The department is responsible for (1) providing suitable films, (2) keeping them in good order, and (3) transporting them from school to school. It is difficult to select films for school circuits that will correlate with the course of study because the person making the selection has to construct in advance a film schedule which is inflexible, whereas the program of study varies. At present, even in the case of a curriculum committee whose purpose is to select films which will correlate with the course of study, all selections are arbitrarily made, are dependent on film procurable, and are based on the assumption that the different

schools on the circuit will be ready for a particular film at the time designated.

The sources of films for distribution on the circuit may be classified under three headings: first, rental; second, loan; and third, films from the department's library.

The special-order method of distribution is simple in operation. A teacher or principal in any school in the city phones to the department, or communicates with the department in another manner, and orders a film to be sent to them by a certain day and hour for exhibition. The teacher is limited to those films available at the department and she depends on the department to furnish film in good condition and in most cases to transport the film to and from the school.

Departments using the special-order method of distribution have adopted four rather distinct practices in providing films to be ordered. First, films may be purchased outright by the department and placed at the disposal of the schools; second, film may be borrowed by the department for a year or longer from government bureaus and national manufacturing concerns and distributed to the schools which desire to make use of such material; third, the department may rent or lease for a period of time reels which are listed along with those already available at the department; and fourth, the department may act as a broker by ordering films for schools from exchanges, university bureaus, and other distributing agencies.

A recent survey by the author shows that the special-order method of distribution serves a larger per cent of schools in cities than does the circuit method, but that the circuit method is somewhat more intense than the special-order method in terms of the number of films sent to each school per month. When one considers the fact that the circuit method forces films on the school at specified dates and that the special-order

method is dependent upon orders from teachers who desire films to be shown, it would appear that the special-order method is functioning in a way that is to be highly commended. The fact that a teacher orders a film indicates that there is likely to be better pedagogical use made of it than when it is sent on regular schedule.

St. Louis has combined the advantages of both methods of distribution. The delivery trucks call at each school regularly on a circuit regardless of whether they have any material to deliver or pick up, but the teacher is under no obligation to order material. The fact that the truck makes regular trips to the school serves as an impetus to the teacher, which is one of the main advantages of the circuit method, but inasmuch as the choice of materials remains in the hands of the teacher the best part of the special-order method is retained.

The distribution of slides—It is a common practice to distribute slides in sets; however, teachers who wish to make a selection of slides to illustrate some particular phase of a topic or wish to make a special set from other sets of slides may do so. Stereographs are also sent out in sets, very frequently accompanying exhibits. At Cleveland, Detroit, and St. Louis, the exhibits which are circulated among the schools are accompanied by pictures and reading matter. Such exhibits are called collections. Pictures are frequently sent in sets. The miscellaneous material, such as charts, models, and booklets, are grouped and distributed in the same fashion as slides, stereographs, and pictures. Each city has its own particular method of making up sets of slides, exhibits, stereographs, and pictures, and works out its own best method of packing and shipping these materials.

All materials other than films are distributed by the special-order method. The time which slides, stereographs, pictures,

exhibits, and the like must be ordered in advance varies according to the rules of the various departments from no set time to two days. The length of the loan varies from two days to two weeks. The most frequent length of time which materials may be kept by the school is one week. There are three methods used to distribute materials as far as transportation is concerned: one is by school truck or department truck, the other is by messenger sent out by the department, and the third is by a messenger from the school. Experience shows that the methods are most successful in the order named: truck, messenger from department, messenger from school.

TEACHER TRAINING IMPORTANT

Perhaps the most important problem in the administration of organized visual instruction in the public schools is the training of teachers. If teachers are to make effective use of the visual aids available in bureaus and museums they must first be trained in how to use them in the classroom.

There are several ways in which teachers may be trained in the art of visual instruction. These methods can be listed under three major headings: (1) formal instruction, (2) semiformal instruction, and (3) informal instruction. Instruction gained through recognized courses in institutions of learning is thought of as formal training. Semiformal instruction is illustrated by that received at teachers' institutes and from short courses. Informal instruction is the resultant of such vicarious experiences as the occasional lecture or scattered reading.

The growth of visual education is in no small degree due to the spread of information by informal methods. In fact, much of the present interest in visual instruction has been developed through the efforts of advertisers to place before the school public a considerable amount of information con-

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cerning visual materials. Many teachers have employed visual methods backed by no other training than that received through informal methods. However, it is obvious that such training is not as apt to develop permanent interest in visual education as is the training which is gained through formal or semiformal methods.

Wise is the director of a visual-instruction bureau who does everything in his power to develop a program of teacher training throughout the constituency which his department serves.

EDUCATIONAL WORK OF CITY MUSEUMS, LIBRARIES, AND OTHER INSTITUTIONS

In conclusion, mention should be made of the extensive activities of city libraries, museums, and other similar institutions which are actively engaged in assisting the administration of visual instruction in public schools. Such institutions are to be found in Buffalo, Chicago, Cleveland, Detroit, Los Angeles, Newark, New York, Oakland, Philadelphia, and Pittsburgh.⁸

⁸There are a number of museums actively engaged in educational work in cities not having departments of visual education. Among others, the following have attained considerable prominence: The Children's Museum, Boston; The Charleston, South Carolina, Museum; The Davenport, Iowa, Academy of Sciences; The Fairbanks Museum of Natural Sciences, St. Johnsbury, Vermont; and the Public Museum of the City of Milwaukee, Wisconsin. A detailed description of the work of the Milwaukee museum will serve as an example of the educational service given. Work in the city schools began in 1911. A department of extension was created in 1921 with a staff of nine persons, a supervisor of extension, an associate lecturer, two clerks and stenographers, three motion-picture operators, and two photographers. The museum spent \$14,440.16 for extension work in 1922-1923. Up to 1922-1923 a small subsidy was given the museum by the Board of Education. The museum department of extension owns two moving-picture projectors, three stereopticons, forty-five films, 36,408 slides, 1,304 stereographs, 1,309 loan exhibits, 686 pictures (347 mounted), and 20 charts. In addition the museum rented for extension work 60 films and borrowed an additional 25 films. The museum served 22 schools with films, 53 with slides, and 20 with exhibits during 1922-1923. The number of single orders filled were 76 for films, 1429 for slides, and 184 for exhibits. No stereographs and pictures were circulated. All materials except exhibits are delivered to the borrower at the museum. The exhibits are sent to the schools by express service. The museum also gives an extensive list of lectures for adults and for school children and conducts a number of field excursions. Nonportable exhibits may be viewed at the museum. A catalogue is printed each year containing a list of the lectures and loan collections.

Among other institutions which have attained prominence, we may mention The Art Institute and The Field Museum Harris Extension at Chicago; The Cleveland Museum of Art and Museum of Natural History; the Detroit Municipal Museum; The Southwest Museum, Los Angeles; The Newark Museum Association and the Newark Public Library; The American Museum of Natural History; The Children's Museum, a branch of the Central Museum of the Brooklyn Institute of Arts and Sciences, and the Metropolitan Museum of Art in New York City; The Oakland Public Museum; and the Carnegie Museum, Carnegie Library, and the United States Bureau of Mines Experiment Station in Pittsburgh.

The educational work of these institutions may be characterized by the following points: First, there is a spirit of genuine coöperation between them and the city school departments of visual instruction. Chicago, Cleveland, and Pittsburgh list the visual aids available at these institutions in the catalogues issued by the department of visual instruction. The Cleveland and Pittsburgh city school departments assist in the transportation of these materials and boards of education subsidize the educational work of such institutions in Buffalo, Detroit, and New York. Second, in many cases the institutions attempt to organize their exhibits, materials, and lectures in terms of the course of study. Third, the common practice is to take the museum to the schools. Finally, visual-education departments in cities where there are institutions giving extensive service to schools have limited their own activities to those materials which do not overlap with the efforts of such institutions.

The educational activities of museums, libraries, and other similar institutions along the lines of visual instruction deserve commendation. They are doing a constructive

service. However, the writer ventures the opinion that here as in the case of commercially made visual aids coöperation with teachers must reach back further in time than it has. Coöperation with school authorities, particularly with teachers, begins too often with the problem of distributing an exhibit, a set of slides, or a film after it has been created. Such coöperation assumes that those outside the school are in a better position to create instructional material than teachers. From the technical point of view this may be true but from the psychological standpoint this may not be the case. Coöperation between school

authorities and the creators of visual aids must begin with the inception of the aid to be made. Visual education will advance by leaps and bounds once the truth of this principle is sufficiently impressed on schoolmen and the creators of visual aids alike. Coöperation in the creation of visual materials must not only be believed in but it must be of a type which functions from the beginning. This would develop an insight into the common problems of visual instruction which would make the administration of visual instruction in public schools more effective than it has been up to the present time.

THE ORGANIZATION OF A DEPARTMENT OF VISUAL EDUCATION

JAMES G. SIGMAN

EDITOR'S NOTE: *Mr. Sigman is director of visual education, Philadelphia. In this article he tells of the organization of the department which he directs.* F. E. L.

Because of the interest which is always attached to the birth and growth of an "infant industry," the organization of a Division of Visual Education in Philadelphia about eighteen months ago created considerable comment and question among educators. True to its traditions, Philadelphia was slightly slower than its neighbors, Newark, New York City, and Pittsburgh, in the organization of this valuable field of educational work. Philadelphia combines the spirit of progress and conservatism in much the same manner described by the verse which runs as follows:

Be not the first by whom the new is tried
Nor yet the last to lay the old aside.

As a matter of fact, Philadelphia had been carrying on a gradually enlarging visual program in its public schools throughout the previous quarter of a century before the official organization of this division. The new director has found old catalogue lists of lantern slides dating as far back as 1905, and the activities of the Commercial Museum in its manifold services to the

public schools began not long after that date. Hence, this new division was not an "infant industry" in every sense of the term, because it was actually the "heir of all the ages." Of previous publications and among the legacies bequeathed to this division were the splendid list of lantern slides moved from the Pedagogical Library; also the Museum service with public-school teachers actually in residence there, in charge of Museum instruction to classes; and finally apparatus and equipment which Dr. Broome's report estimated at a value of \$100,000, already placed in the schools prior to April, 1929.

Range and character of service—The first task of this division therefore was to organize and service a great and varied amount of older visual equipment, and to bring it into a higher degree of use and efficiency as soon as possible.

A survey of existing visual programs and equipment was at once undertaken through the combined agencies of a questionnaire and a series of personal visits to schools.

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This survey revealed the fact that the schools possessed about seventy motion-picture machines, of which ten were obsolete substandard types. There were no projectors of the new 16 mm. classroom type whatever. Obviously the problem in the motion-picture field was twofold: to repair and service the sixty usable standard machines and the booth equipment required for proper projection; secondly, to plan an expansion program, based on experimentation and testing, in order to develop the possibilities of this new and fertile 16 mm. field.

In the line of lantern materials it was likewise discovered that the city was well served, at least in numbers, by a total equipment of over 300 glass-slide projectors, and over sixty opaque and combination projectors. Our survey, however, also disclosed the fact that almost half of these were very venerable in point of years and length of service in the schools. The other half, as well as all of the opaque projectors, were relatively recent in installation, being purchased within the last ten years. Our service was therefore organized to cover three general fields of visual education, as follows:

a) A continuation and expansion of Museum service to schools, which included in 1929 organized visitation to the Commercial Museum by over 100,000 public-school children of Philadelphia. The Museum program included lessons and demonstrations in charge of the three Museum teachers during the forenoons; and lectures (followed by Museum trips) in charge of the curator or assistant curator, aided by the Museum teachers, on a larger scale in the afternoons. This Museum service has been extended, in 1930, to include, at Mr. Dillaway's request, the employment of a teacher of art education in the splendid Pennsylvania Art Museum on the Parkway. Perhaps later it may be extended still fur-

ther in coöperation with the Division of Science, of which Dr. Wildman is director, to include the Academy of Natural Sciences and other scientific institutions.

b) *Lantern Instruction.*—For the better organization and use of all school lantern materials a central library was created in the offices of this division in Administration Building No. 4. This has grown to include almost 40,000 glass slides, about 600 reels of still film, and about 150 reels of film-slide or film-strip materials. This circulating library of glass-slide and film-slide materials for lanterns has grown rapidly throughout the past eighteen school months in its service to the schools to the extent that the services of another truck will soon be required to complete deliveries and collections on schedule. Almost 400 still-film and film-slide attachments have been installed, mostly in the elementary schools, in order to make the lanterns already in use of double value to the school curriculum.

c) *Motion-Picture Service*—For the proper servicing and supplying of our sixty standard machines already installed with booth equipment in the Philadelphia schools, a standard or 35 mm. film library was organized in September 1929. This was partly developed from loan and rental sources, and partly as a permanent possession of the Board of Education by gift and purchase methods. Within the short space of one year this library has increased to a total of 400 reels, divided almost exactly between the loan and permanent divisions before mentioned. These reels are selected entirely from safety stock, to comply with the rules of the Board of Education forbidding the showing or storing of inflammable film in public schools.

A similar library for 16 mm. film has also been started, although, because of the smaller number of projectors, it has been developed to date on a much smaller scale. With the midyear deliveries of September

1930, however, the total of these classroom projectors has reached about seventy, and the total number of reels of 16 mm. film in our circulating library has reached about 340, of which twenty-five are loan contributions and 315 reels are owned outright.

Organization and Distribution—The organization of this division, with its various circulating libraries created to service and supply the public schools which were already fairly well equipped with projectors of certain types, has been a major task during the short period of its existence.

In order to make the work of our division more complete and successful, the closest coöperation with distinct special divisions in charge of the teaching of special subjects has been necessary. Constant consultations with the directors of art education, music education, health and physical education, science education, home economics, mechanic arts, and special education, have been held in order to secure the best possible films and lantern materials for correlation with each separate grade and subject.

Our Museum work is organized primarily to supplement the teaching of elementary geography, and the three Museum teachers are geography specialists. Likewise the art teacher who has just been appointed for art instruction at the Art Museum must necessarily be an art specialist, and the science instruction already organized in the Commercial Museum must of course be done in coöperation with Dr. Wildman, director of the Division of Science Education, and his assistants.

The distribution both of children and of materials to take advantage of these visual opportunities has been a second serious problem which we have had to face. In order to transport such a great number of sections from all parts of Philadelphia to the Commercial Museum, it has been necessary to make use both of private and public

busses. The Board of Education has given us permission to use school busses to the number of twenty or more originally purchased for the transportation of crippled children to special school centers, during the hours when the busses are not actually needed for this particular service. This arrangement causes some classes from distant districts to be a little late in arriving and departing from the Museum. These facts, together with the length of the waiting list for school busses, has caused quite a few schools to charter at a very reasonable figure the services of one of the private busses for a morning or an afternoon. Such cost is, of course, slightly burdensome to those schools in the poorer sections of the city, even though the individual amount seems relatively low.

The distribution of our films and slides is carried on by means of a Board of Education truck which covers the city of Philadelphia by five district deliveries each week—one fifth of the city being covered on each of the five school days. Films and other material except in special cases of emergency requisition are, therefore, deposited with the schools for one week's use, being collected on the corresponding day of the next week by the driver of the truck. This very essential service has reduced its mileage to a minimum by short cuts between schools, and the driver is actually able to cover between fifty and sixty schools in a day as a result of careful routing and long experience.

These libraries are now organized to include seven types of loan materials for schools: (a) standard or 35 mm. film; (b) 16 mm. film; (c) still film; (d) film slides; (e) glass slides; (f) stereographs; (g) historical prints.

Teacher Training—The problem of teacher training for the proper use of visual materials has been partly solved within this same brief period of ten months by a very

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happy combination of circumstances. The new plan extending the normal-school curriculum from two to three years in length has now been further extended to make this splendid teacher-training course a four-year project. The fourth year will be largely devoted to the teachers already in service who desire extension courses leading to a degree. The first three years will continue to be instruction in residence. Mr. John T. Garman, newly appointed special assistant in the Division of Visual Education, will teach this fourth-year class in visual methods for teachers in service on Saturday mornings during 1930-1931.

As a required part of the new 15-B course and this additional third year of normal-school training in residence, Mr. John Guthrie, head of the history department at that time, was appointed by Dr. Edwin Adams, director of teacher training for the city of Philadelphia, to organize and teach sections in visual education. These classes have followed the general outline placed in the fourteen State teachers colleges of Pennsylvania by Dr. C. F. Hoban, the State director of visual instruction. A visual laboratory has also been fitted up for the use of these sections in the normal school during the past term, containing all types of projection apparatus used as standard equipment in the Philadelphia public schools. The director of this division has maintained two classes in visual education at Temple University throughout the past semester, including over 130 teachers, principals, and supervisors in service in the schools of Philadelphia and vicinity who are completing their master's or bachelor's credits in the School of Education of that institution.

This work has also been supplemented by the frequent publication of bulletins explaining types of visual apparatus and their use, as well as the subjects listed in the film and slide libraries available in this division.

The director has visited and personally demonstrated visual methods and new types of apparatus in about seventy-five schools of the city during the past ten months in an effort to familiarize the teachers in all grades with their use and value, and "to sell" visual methods to principals, superintendents, and teachers.

Personnel—Naturally the limitations of our original budget, and the work of organization and survey which took up most of the spring term, restricted the scope of our personnel organization. With the formation of our film library in September 1929, additions to our clerical and mechanical corps of assistants became necessary. With the continued increase of these visual libraries in February of 1930, further additions to our personnel became imperative.

As a result of these three steps in our brief history, the following is the present personnel of the Division of Visual Education in Philadelphia, in addition to the director himself: (1) one professional or special assistant in the instructional field; (2) five clerical assistants; (a) one chief clerical assistant; (b) one museum clerical assistant; (c) one glass-slide clerk; (d) one motion-picture film clerk (also in charge of bookings and bulletins); (e) one film clerk for still film, film slides, and other varieties of visual materials; (3) three mechanical assistants and operators; (4) three museum teachers permanently attached to the Commercial Museum and one assigned to the Art Museum. The total personnel on the pay roll of this division is therefore fourteen.

In conclusion, I can only repeat the hope presented at the opening of this paper, that Philadelphia may move forward with steady progress in the field of visual education. The school authorities have been most kind in their coöperation and assistance in the housing and appropriation of supplies for this new division. We realize that we have

barely scratched the surface of this great problem up to this time, and that the first year has been one largely of experimentation and organization, demanding clerical and mechanical assistance in order to check old materials and bring them into active service. Our next need will probably be more professional assistance in some form or another in the budget of 1931, together with increased museum plans and personnel. It is a matter of pardonable pride that we have been able to advance so fast and so

far in this limited period of time. But, of course, we realize what greater problems lie before us, in order to carry this visual idea completely and enthusiastically to all the grades and types of schools in a city the size of Philadelphia, the third in the United States in point of population. If these problems can be solved within the next few years, the conservatism of Philadelphia in the past may prove to be an incentive to still greater progress as our plans for expansion materialize in the future.

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HARRY H. HAWORTH

EDITOR'S NOTE: *Mr. Haworth, supervisor of visual education, Pasadena, California, tells how his department is administered. He stresses the necessity of utilizing local industries and local materials in building up the collections.*

F. E. L.

Visual instruction is an effective method of teaching—a very powerful method. It is not a subject of the curriculum. It is used by all teachers, yet many do not call their method by this name.

Visual instruction has been defined as "bringing to the child concrete, vivid impressions of things that would otherwise be beyond his conception." Charles Roach, director of the Visual Education Division, Los Angeles, City Schools, says the visual method of instruction uses "every pictorial or objective device which by its introduction will help to form correct concepts."

Visual methods of instruction increase the interest and shorten the learning period by providing definite, concrete visual impressions. "That which strikes the eye Dwells long within the mind; the faithful sight Engraves the knowledge with a beam of light," says Horace. By skillful use of visual aids, correct concepts are formed quickly, and many of the queer misconceptions are avoided.

However, merely exposing the child to a picture does not necessarily mean that any fundamental learning has taken place. The learning process has only just begun with

the reception of the stimuli through the eyes. After visual stimulation there must follow a period of reflective thought and reasoning accompanied by meaningful activity which should result in some definite mode of expression that makes use of the knowledge gained.

"In other words," says Anna V. Dorris, "when the acquired knowledge actually functions in daily living, the life of the child is truly enriched and growth and power are acquired."¹ Visual aids should be used as references from which the pupil may secure the information he needs. They should not be presented by the teacher as an unwanted dose of medicine which the child must take.

There are three general methods of using visual aids. (1) They may be used to motivate or arouse interest in a subject that is being studied. For this purpose, the visual aids are usually presented at the beginning, or very early in the study of the problem. (2) If the problem has been introduced and motivated, it is often very essential to clarify and develop the ideas of the pupils. This comes usually in the

¹ Anna V. Dorris, *Educational Screen*, VI, p. 363.

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midst of the study of that subject, and may be called the "Developmental Method." (3) The visual aids may be used to review a subject coming at the close of the consideration of the problem.

Since a large proportion of the education gained by the average individual comes through the eye, the visual-education department must deal with the entire field of instruction. The functions of the department are fourfold: (1) to introduce the visual-instruction method to the teachers and to assist them in the correct and economical use of this powerful method; (2) to secure visual aids; (3) to organize visual aids in a scientific manner corresponding with the course of study, and (4) to circulate these aids among the various schools.

In the Pasadena city schools, one teacher, or a committee of teachers, is appointed by the principal to assist in introducing and carrying out the visual program within the schools. These teachers carry this work in addition to a full teaching load, as a part of their extracurricular activities.

During the first year of our department's existence, we placed considerable emphasis on the use of motion pictures, especially for purposes of review. We regard the moving film as valuable but there are many difficulties connected with its use. In our schools most of it had to be done as mass instruction with large groups of students in the auditorium. The tendency is to make it mere entertainment. But entertainment is not the goal of education, so we emphasize the use of strictly classroom aids—stereographs, with their third dimensions, and flat pictures which do not require projection equipment; exhibits such as actual samples of industrial products, which may be passed from pupil to pupil; and lantern slides and still films which may be projected on daylight screens in the classroom. With a good translucent screen, such as

may easily be made from architects' vellum tracing paper, stretched on a suitable frame, it is possible to project even motion pictures fairly satisfactorily in the average undarkened classroom. Let me emphasize again that all visual aids should be used in the regular classroom, if it is at all possible.

When organizing a department of visual instruction in a public-school system the first problem after the selection of the director or supervisor is that of securing visual aids for use in the system. Since visual aids have been used by many of the teachers in a more or less unorganized way for a number of years, the department in almost any system will inherit, from miscellaneous sources, a large number of lantern slides, pictures, stereographs, and possibly even motion-picture films. This material should be gone over, weeded out, and organized in some form so that it may circulate throughout the system and be of some value when it reaches the classroom. Also there will be some funds for the purchase of new material. It will fall upon the director to select, with the assistance of the teachers, those materials which are most needed in the system. In this connection we have found it very valuable to have standing volunteer committees for each grade, composed of good teachers, who may be called in to advise us in selecting new material, organizing it, and determining the best methods of using it.

Here I wish to emphasize the importance of the photographic laboratory as a means of securing visual aids which will fit the needs of the curriculum. Every community has a wealth of visual material of its own, and the instructional program is richer if it makes use of these local conditions. Nature study and biology should be illustrated with local flora and fauna. These are often not available from the commercial supply houses, and can be prepared in the photographic laboratory. Local industries,

buildings, and civic enterprises should be studied in connection with the geological features, climate, and other conditions which are the controlling factors with so many of them. Many teachers travel widely during their vacations collecting valuable material which they are only too glad to loan to a well-equipped laboratory to be worked up into lantern slides and photographs for circulation throughout the entire system. They feel that they have contributed something worth while to their system and should receive in return a set of slides or enlargements for their own personal use. In this way a well-equipped photographic department can supply excellent instructional material at a great saving over commercial prices, and also better meet the needs of the classrooms.

All of these visual aids must be organized by some scheme to correlate with the curriculum. The visual-instruction department should furnish the materials that will assist the teachers in following the course of study.

We believe that this can best be accomplished by grouping the pictures in small sets all relating to one subject or theme. Our sets run from a minimum of two to a maximum of fifteen pictures, with an average of five. This applies to lantern slides, stereographs, and all small study prints, whether they be photographs or any other type of print. Many of the large wall prints, posters, or charts will have to be handled separately because it is practically impossible, physically, to group them into sets. They are used in so many different ways and for so many different purposes that it is not advisable to try to organize them into units. We believe that the best practice calls for one carefully selected wall picture with one or two sets of study prints or stereographs to supply the necessary information suggested by the study of the large one.

The classification of pictures for school-room use is extremely difficult. There has been very little experimentation and authoritative guides on the subject. The material must be so grouped and organized that it may be used to supplement specific units of work, and yet arranged in such a logical and comprehensive manner that no section assumes undue importance, and that the same general grouping and organization may continue despite yearly changes in the curriculum.

Miss Marion Israel, of the Los Angeles County Visual Education Department, together with a committee of teachers, librarians, and visual-education workers, has worked out a simplified adaptation of the Dewey decimal system for classifying books. It divides the subject matter of the curriculum into eight main heads, then divides and subdivides using Dewey as a guide so far as practicable.

At the present time we are experimenting with the Dewey decimal classification, using fewer adaptations than Miss Israel uses. Our constant reference is the book by Melvil Dewey, *Decimal Classification and Relative Index*.

The reader, if interested in the details of the system, is referred to the Explanations and Introductions found in any of the editions of this book.

Briefly summarized, the system is as follows: "The field of knowledge is divided into nine main classes and these are numbered by the digits 1 to 9. Each class is similarly separated into nine divisions; divisions are similarly divided into nine sections and the process is repeated as often as necessary." Thus 636 means Class 6 (Useful Arts), Division 3 (Agriculture), Section 6 (Domestic Animals), and every domestic animal is numbered 636.

Since we have several different types of material we have found it desirable to prefix letters to our numbers. We have arbi-

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trarily adopted the following letters as abbreviations:

P—Print (study print intended for use at child's desk)

W—Wall print (posters, large photographs, paintings, etc., to be used for study by all of class at once)

S—Stereographs

L—Lantern Slides

S. F.—Still Film

Ex.—Exhibits

R—Roll film or Film slide

Our motion pictures, at the present time, are arranged under two different systems; that for the 35 mm. film corresponding to the system used by the department of visual instruction of the University of California, Extension Division, at Berkeley; that for the 16 mm. film a straight alphabetical-by-title arrangement.

In order that each set of material have a different number, we have added to the classification number a dash and an accession number. These numbers are recorded on cards, together with the title of the set, and filed numerically under types of material.

Thus L636-4 tells us that this set is the fourth set we have of lantern slides of domestic animals. Duplicates of sets are indicated by adding below the number "copy 1," "copy 2," "copy 3," etc.

In order that primary material may be classified under the same system, yet be separated from the material for upper grades, we have prefixed an "X" to our number. Thus XS636 means "Primary Stereographs of domestic animals."

There are many details which we are working out to fit our local conditions. At the present time we are just beginning to install this system of classification, and although we feel that it is the best we have yet tried, we will have to experiment and use it for two or three years in order to know to our own satisfaction whether or

not it is as suitable for the classification of visual aids as it has been proved to be for books.

While the library of visual aids is being secured and organized it will also be necessary for the director to devote considerable time to the supervision of the use of these materials in the classroom. The new department must sell itself to the teachers and through them to the general administration of the schools and the taxpayers. The best method of doing this is to render a service to the children which they have never before received.

"Of the sensory appeals, especially with young children, the visual appeal is probably the most effective. Pictures and objects afford a never-failing stimulus to both old and young."² "Interest and information are reciprocal; interest leads to the acquiring of information, and added information brings added interest," as some one has said. The visual department, by rendering this service, will be nurturing itself in a substantial way and building a foundation that bodes well for the future. The service of a visual-instruction department cannot be forced upon the teachers, for in the words of John Dewey, "interest is intrinsic"; that where interest exists the teachers do their work not because they hope to escape some supervisor's rating, but because the work itself commands their attention.

A supervisory practice which has proven very helpful is to hold a series of meetings, once each semester, of all teachers of each of the elementary grades and of each department of the secondary schools in the exhibit room of the visual-education department. At these conferences is given instruction in the operation of projection equipment, suggestions regarding the use of visual aids, and an exhibit of the new pictures which are available. The majority of

² Anna V. Dorris, *Visual Instruction in the Public Schools*, p. 18.

the teachers are very much interested in the use of instructive and artistic pictures for their subjects. They are very appreciative of the opportunity of using them.

Upon invitation of the principals, we meet with the faculties of different schools to discuss problems of special needs. For these meetings we take some of our materials, and give a demonstration of visual methods and materials.

A great deal of our supervisory work is done through individual conferences and suggestions to the teachers as they call at our department and on visits to their classrooms.

We strongly recommend that the teachers call at least once each semester at our exhibit rooms to see and select the materials they wish to use. It is then possible for them to make out a schedule of the pictures they wish to use and leave definite requests for the rest of the term. These orders are then put up by our shipping department and delivered to the teachers as scheduled.

SHIPPING REGULATIONS

How to Secure Visual Aids

1. Examine catalogue and lists on file in principal's office.
2. Consult with your principal or visual-education committeeman if necessary.
3. Make a personal visit to the department, or write or telephone.
4. Materials may be booked for the entire season in advance.
5. Request by exact number and title.

Requests

Requests placed well in advance are given precedence. Written orders are more satisfactory than telephone requests. Personal visits to the office offer the opportunity for careful selection and adaptation of materials to the classroom needs.

Loan Period

1. Visual aids are loaned for a period of one week, except motion pictures.
2. Each teacher is permitted to take as many materials as can be used successfully during one week, bearing in mind that only a very few pictures can be studied effectively in any one lesson.
3. Motion-picture films will be loaned for one day only, unless arranged for previously. They may be used again at a later date.

Renewal of Borrowed Material

1. Material's may be renewed, provided there are no previous requests.
2. Overdue material may not be renewed.

Damage

Damaged, lost, or badly soiled material should be replaced or paid for.

Truck Delivery Schedule

1. Delivery and pick-up service operates on Tuesdays and Fridays, to the principal's office. Requests may be phoned to our office and will be sent out on the next delivery.
2. In returning visual materials, leave them at the principal's office with the library books the evening preceding the date they are due. The driver has instructions to pick them up, and will call for them on the due date.

Personal Delivery

Any teachers who prefer to call for and return materials by their own conveyance may do so.

Supplementary Lists

From time to time bulletins will be issued from our office, listing new materials and giving suggestions regarding their use.

Service

The visual-education department is your service station. Its resources are for your help. Every member of the staff is committed to the ideal of perfect service, to the end that teachers may be inspired and the children helped. Your suggestions for the improvement of the service, and the methods which you find to be most successful in the classroom are very much appreciated.

Join the CLEARING HOUSE *Boosters' Club* by sending in five or more subscriptions. Your certificate of membership will be a bound volume of the CLEARING HOUSE for your personal or school library.



FIG. 1—Student operating a Bell and Howell projector



FIG. 2—Overhead projection, Bausch and Lomb projector

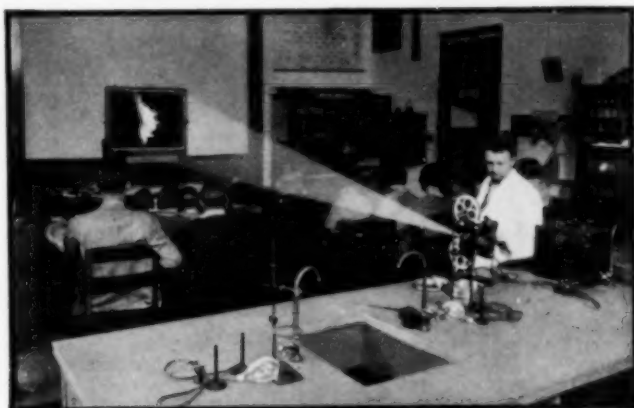


FIG. 3—A class in chemistry using a Bell and Howell projector



FIG. 4—Bell and Howell projector in use in a science class



FIG. 5—Dixie. Major Allen proposes a toast to the Confederacy from the veranda of the Great House on the eve of his departure for the front



FIG. 6—Dixie. On April 9, 1865, in the presence of his staff and other Federal officers, Grant presents to Lee the terms of the surrender of the Army of Northern Virginia



FIG. 7—First-grade class using flat pictures



FIG. 8—Teachers using the visual education exhibit room



FIG. 9—First-grade children using stereographs



COURTESY R. C. A.

FIG. 10—Sound on film. Variable area system of recording. The sound track is at the left of the pictures, next to the sprocket holes. Compare with Fig. 11.



SLIGHTLY ENLARGED

FIG. 11—Variable density recording. The sound track is between the pictures and the sprocket holes. Compare with Fig. 10.

FIG. 12—Combination opaque and lantern slide projector, Bausch and Lomb



FIG. 13 (left)—Bausch and Lomb lantern slide projector

FIG. 14 (below)—“Little Wonder” combination opaque and lantern slide projector, Trans-Lux Daylight Picture Screen Corporation.

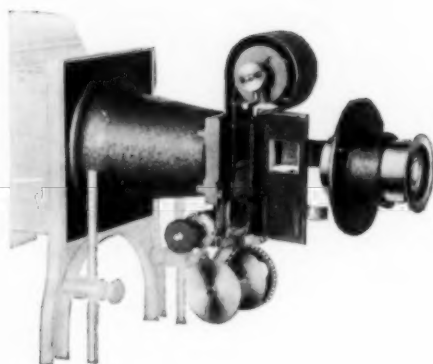


FIG. 15—Film attachment for Bausch and Lomb lantern slide projector



HOW THE MOVIES TALK

HARRY E. BUTLER

EDITOR'S NOTE: The editors feel that a background of simple facts concerning the technical processes involved in endowing the photographic image with speech as well as with motion would have its value when practical problems of educational recording, of selection, and installation of equipment arise. Mr. Butler is a professional motion-picture director who has specialized in the sound motion pictures since their inception, and is well known both in Hollywood and New York. He has directed some of the best industrial and educational sound pictures of the last few years. His lucid explanation of a supposedly intricate problem is based on what his experience has shown would aid the teacher in dealing with matters of sound presentation.

Sound pictures may be roughly divided into three groups: first "talking pictures," where music, speech, and natural sounds are recorded as the picture is being photographed; second "synchronized pictures," where the sounds and music, etc., are recorded after the picture has been finished, and in close synchronization with the action of the film; third "scored pictures," which are silent pictures with a musical score especially arranged to accompany the pic-

ture, and is an example of the disc system. The sound-track system is represented by such trade names as Movietone, Photophone, etc.

Of the two systems, the sound-track is most widely used at present. It is rapidly gaining favor over the disc system mainly for technical reasons, as there is little appreciable difference in the quality of the music or voice reproduced.

In the sound-track system, the sound is

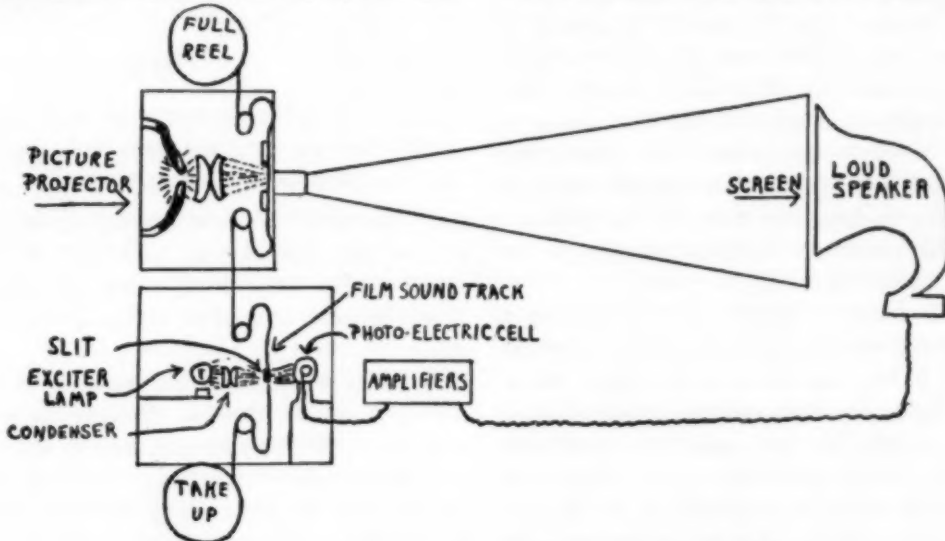


DIAGRAM OF "SOUND ON FILM" REPRODUCTION OUTFIT

ture, or an accompanying lecture with or without incidental music.

There are two major systems of making talking pictures. One is the "sound-track system," in which the sound is recorded on a film. The other is the "disc system" in which the sound is recorded on a large phonograph disc. "Vitaphone" is a trade

name, and is an example of the disc system. The sound-track system is represented by such trade names as Movietone, Photophone, etc.

When a sound picture is ready to be photographed, the scene is prepared, the action rehearsed, and one or more microphones are placed at advantageous positions in the scene. These are usually concealed.

The microphones, actuated by the sound waves, cause a fluctuating electric current to flow in a circuit connected with a set of amplifiers, similar to those used in a radio receiving set. The weak current is amplified about 100,000,000 times and is then passed to the sound recorder.

The sound recorder registers the fluctuations of the electrical current that comes from the amplifiers to the film. There are two principal systems of recording. One is the "variable density system"; the other is the "variable area system."

For the variable density system there are likewise two major methods of recording: that employed by De Forest and Fox, known as the "aeo light"; and the mechanical light valve, developed by Western Electric. In the former, the "aeo light"—resembling not a little the "neon gas tube"—is inserted into the camera by means of a brass tube, at the end of which is a slit of approximately .07 by .0005 inches. This slit is in actual contact with the film as it runs through the camera; the fluctuating current from the amplifier causes the light to vary in intensity, thus leaving a photographic record of variable densities on the film. (See figure 11.)

The Western Electric system employs a lamp not unlike an automobile headlight bulb, a lens assembly, and a light wave. The light wave is an electromechanical shutter, actuated by the amplified sound currents. It modulates a light beam of constant intensity, which is projected on the film by the lens system, leaving a photographic record of variable density like that of the "aeo light."

In the "variable area system" of recording, developed by the Radio Corporation of America, the record on the film resembles a series of peaks and valleys, the portion nearest the sprocket holes of the film being black, and the rest of the sound track being transparent. The fluctuating current from the amplifiers passes to an oscillograph

galvanometer in the recorder. The galvanometer consists of a molybdenum wire loop through which the amplified microphone current circulates. A small mirror is attached to this loop, and the loop suspended in a magnetic field. A lamp similar to an automobile headlight lamp furnishes the illumination. The light from this lamp passes through a condenser lens and is focused on the galvanometer mirror. The mirror reflects the light through another condenser lens upon a slit in a piece of metal .002 by .280 inches. The resultant slit of light passes through a projector lens which optically reduces it to .0005 by .070 inches at the point where it strikes the film. (See figure below.) As a matter of

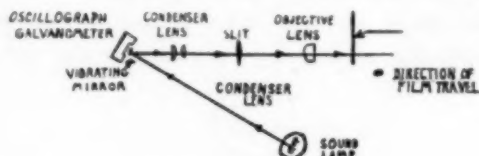


DIAGRAM OF OPTICAL SYSTEM IN RADIO CORPORATION OF AMERICA VARIABLE AREA SOUND FILM RECORDING

fact, the beam of light impinging on the slit actually covers only one half of the sound track, lengthwise, when no microphone current is applied to the galvanometer.

By the current which fluctuates with the sound vibrations flowing through the galvanometer, the molybdenum loop is set into a corresponding vibration, vibrating the mirror with it, and tracing a line of light the width of the slit across the .070 inch sound track of the film.

In figure 10 the peaks extending across part of the sound track represent a lower volume of sound than those peaks covering the full width of the track. The fine lines indicate the higher frequencies; the heavier and thicker peaks the lower frequencies. It will be noted that many of the peaks are covered with fine fringe-like extensions. These represent the overtones

HOW THE MOVIES TALK

and give the reproduced sound the additional frequencies present in the original microphone production.

In news-reel work, the sound is sometimes put on the same film that carries the photographic image. This is known as the "single system," because the photographic and sound negatives are on a single length of film. Great care must be taken in the development of such a negative, especially when the variable density system is used, as the sound track is developed simultaneously with the picture, and the density of the sound track materially affects the reproducing quality. With the variable area system the density of the sound track has very little to do with the quality of the reproduction.

All theatrical films are made with what is known as the double- or two-film system. In this system, the sound record is made on a separate film from that of the picture and developed separately, the two being combined when making the finished print. With this system, development is always under control, and the right density can be obtained to give the best results, photographic as well as sound.

Reproduction of sound from the film is accomplished through a reverse process from that of recording. A beam of light, narrowed into a slit by a system of lenses, is focused on the sound track of the film as it passes through the projector.

As the beam of light passes through the sound track, its light values are changed by the process of irregular peaks and valleys, or the variation in the density in the variable density system, on the moving film which runs at a constant speed of ninety feet a minute. The varying light is permitted to enter a photo-electric cell. The photo-electric cell is highly sensitive to changes in light intensity, and will vary the current in the circuit to which it is connected if the changing light beam is focused upon it. Thus the changes in light

created by the photographic record on the sound track will vary an electric current through the medium of the photo-electric cell. This varying current is sent through a system of vacuum-tube amplifiers which step its value up to a value sufficient to give proper volume to the loud speakers which are placed behind the screen. These speakers are equipped with directional baffles, which give the illusion that the voice is coming from the person whose image is seen on the screen. (See figure on page 223.)

The first theaters to use talking pictures employed the "disc system" exclusively; sound on film had not been perfected to a degree that made it practical. Many small theaters are still equipped for disc reproduction only and all the large producing companies also make discs to accommodate them.

The disc used for recording is a wax composition and quite soft. The wax is put on a turntable the speed of which is synchronous with the cameras, the turntable and cameras being locked together by synchronous motors. The impulses from the microphone are amplified sufficiently to operate an electric stylus which cuts the groove in the wax, leaving a record of the impulses. Dies for stamping the finished records are made from the wax.

The discs are sixteen inches in diameter and the groove starts near the center and travels towards the outer edge—just the reverse of the ordinary phonograph record. The speed of the sixteen-inch disc is thirty-three and one-third revolutions per minute while that of the household record is approximately seventy-eight revolutions per minute. A sixteen-inch disc will play from eleven to fifteen minutes, depending on the number of grooves cut per inch. These large discs are also used in recording programs for radio broadcast and when programs are played from them on the air they

are announced as "electrical transcriptions."

Reproducing a talking picture from the disc is, naturally, just the reverse of recording. A starting point is marked on both disc and film. The disc is placed on a turntable which is interlocked with the projection machine. The needle of the "electrical pick-up" is placed at the starting point.

The starting point mark on the film is placed in the aperture of the projection machine and the two run together. If the film is torn and it is necessary to cut out a few "frames" in order to patch it, these frames must be replaced by blank film in order to keep the film to the proper length; otherwise it would become out of synchronization with the record.

SUNLIGHT PRINTING

ARTHUR M. SEYBOLD

EDITOR'S NOTE: In this article, Mr. Seybold, principal of the Thomas Jefferson Junior High School, Cleveland, Ohio, passes on to us the results of an interesting experiment in reducing the cost of school publications.

F. E. L.

"Does it cost very much money to print a little pamphlet in our print shop?" two boys of a nine-A class inquired of me one morning.

"Are you interested in school publications?" I asked.

"We are very much interested in printing a project upon which our Shadow Players Club has been working," they answered. "We have a good play and we want to print it."

"Of course you do," I replied, "I shall never forget the presentation of your project. It was one of the most original pieces of work which our school has ever attempted. Certainly, it must be published. Let me think a moment; did not the play require forty-five minutes for presentation?"

"Yes we made the program fit into a class period of our school day," replied the boys.

"Well, a program of that length would require twenty pages of printed copy," I informed them. "We could not ask our boys to set type for that much printed matter. Our manual-arts classes have courses of study and extra work must not interfere with the regular program. If your play does not require illustrations we might have your copy linotyped for twenty dollars and

publish the work without too much additional cost or labor."

"But we desire at least ten illustrations," the boys returned without any hesitation.

"Ah, I see that you know what you want," I replied, "that is splendid. But the cost of the booklet would then be much greater. We have found a retired printer on the East Side who makes cuts and half tones for five dollars each. This is much cheaper than any price which has been submitted to us from any commercial firm. But even at this reduced rate your illustrations will cost fifty dollars."

"My, that is too expensive," said the nine A's. "Is there no other way?"

"Etchings and woodcuts might be made," I replied. "However, our school has not developed skill in this field. We have had some success with linoleum blocks, but we do not pride ourselves on our achievements with this medium of artistic expression."

"Then we must find a new way," insisted the two editors of the Shadow Players Club.

"I do have a plan which has been turning over in my mind for some time," I returned. "Last summer my eldest son sensitized ordinary typewriter paper with chemicals. On this paper he printed very good pictures from films taken from a small

SUNLIGHT PRINTING

camera. With this medium he reduced the cost of his camera ventures at least fifty per cent. We might try the same experiment."

We did attempt to sensitize paper in a similar manner. But we found this method too slow and too inexpedient for picture printing in great quantities.

Next we tried to make inexpensive Van Dykes for the development of illustrations on blue-print paper. The club did not like the blue lines, and this plan was discarded.

I then carried the idea to our faculty, telling the teachers of our dream and our need. Mr. Harry Dean of our manual-arts department volunteered to push the investigation further if a selected group of capable boys and girls could be found.

The matter was then taken before the whole school in an auditorium program in which we were attempting to discover special talent in various school endeavors that were then being launched. Thirty students who had had at least two years of experience as amateur photographers responded. From this number Mr. Dean selected twelve boys and girls to continue the photography project.

A large camera, a developing outfit, and a few of the simple necessary accessories for amateur experimentations were purchased. With this limited equipment our Camera Club has accomplished results which are quite unusual. But I shall confine this discussion to the experiments with a new sensitized paper.

The Camera Club had been working for two weeks when a principal from a neighboring junior high school visited our building. I told him of the project instituted by the Shadow Players Club, of the organization of the Camera Club, and of our failure to solve the illustration problem.

"Say," he flashed at me in an inspired moment, "why do you not try Ozalid paper?"

"Ozalid paper? I never heard of it. What is it?" I asked.

"Naturally you would not know of Ozalid paper," he returned. "Its use is entirely outside of your field. I should not know anything about it if my neighbor was not connected with the firm which is promoting its use in Cleveland. Ozalid has not been on the market until recently. This paper is employed in commercial fields where legible blue prints on construction jobs were formerly used. It is printed in the same manner that blue-print paper is given impression, with a vertical or continuous machine, or by sunlight in a flat printing device. The paper is fast, however, and the resultant copy is a deep maroon instead of a pale blue. The paper is developed by ammonia fumes in an Ozalid developer which develops ten yards of paper at one time if the need demands it. I have been told that the process was accidentally discovered by a German chemist who carelessly held a sheet of sensitized paper near the mouth of an ammonia bottle. No one has ever put the discovery to the use which you desire, but I see no reason why this cannot be done."

On the next day Mr. Dean and the Camera Club visited the Cleveland Blue Print and Supply Company where the magic paper is sold. Our problem brought little profit to the firm, but our needs interested them very much. With their hearty co-operation a definite attempt to put Ozalid paper to a practical school use was launched.

Our club can now print photographs, drawings, illustrations of all types available for plates and half tones upon this new paper. If a photograph is desired a negative is first made. Then, as with motion pictures, the image is printed as a positive on film. Drawings thus may be photographed and reproduced in a similar way. Or the illustrations may be drawn directly on vellum and printed directly on Ozalid.

The ten illustrations desired by the Shadow Players Club were developed and placed in their booklet at a cost of nine dollars. Our printer mixed his ink so that the copy matched the deep maroon of the illustrations, and a most artistic combination resulted. The project of the Shadow Players Club was then published at a total cost of twenty-nine dollars, and all of the work with the exception of the linotyping was done at our building.

The Mathematics Club has just written a project, *The History of the Angle*. This requires twenty illustrations which will be developed from vellum and will be printed on thick Ozalid paper so that the opposite side of the sensitized sheets may be used for copy.

If enlarged pictures are desired in quantity in the various departments of our school for display or for teaching purposes, at a cost of one cent for each illustration these pictures are available by the new process.

The most extensive use of Ozalid paper we feel, however, has not been explored. We have now begun to employ it in the construction of composite scrap books in class projects. A printed pamphlet is by far the best means of motivation for pushing projects to completion. Students, like adults, like to see their work in print. But few schools can afford to publish many booklets. We print more than any other public school which I know of, and ten pamphlets a year seems to be our limit.

Any progressive institution will have more than ten projects which clamor for publicity. At least I have found this condition to prevail at our school and the need for the composite scrap book has arisen. This will take the place of the printed pamphlet for many projects which could not receive publication in any other way.

We have under way at the present time a project on Colonial Life and one on Beautiful Cleveland. These projects will be

given form in class activities within special subject fields. The students who have talent in drawing will either trace or draw original pictures of the illustrations desired. Other committees will write data on the special topics selected by the students. These data will be assembled in written manuscript which will be edited by the best students of each class and will be given to the clerks in the office. Stencils will then be cut and mimeographed copies of the material will be printed. The illustrations will be developed by the Camera Club. We have found that sixty copies of composite scrap or project books, containing ten illustrations thus printed, will cost about four dollars.

We hope that this method of class publication will develop better notebook work. Notebooks are usually constructed in the following manner: illustrations are taken from old books or magazines; these pictures are pasted in booklets, and then given brief exposition. An average class would probably create three or four beautiful booklets, ten or twelve mediocre copies, and a residue of inartistic material.

By the above plan a common project is developed, the best work of an entire class is drawn out of committees in an adaptation of socialized recitations, and an interesting task is given to the students.

"Are you not glad we pestered you last fall about our play?" asked the nine-A boys when our first booklet of Ozalid prints came from the print shop.

"I am, indeed, glad that you came to me," I answered. "We have found an inexpensive means of illustrating our school publications, a means of printing composite project books, and a method of presenting inexpensive artistic pictures to the school children of Cleveland. For I have given the history of our work to others who have been interested, and the results of our experimentation have begun to spread through the city."

SCHOOL JOURNEYS AND SCHOOL JOURNALISM

"And, incidentally, you might be pleased to know that the blue-print and supply firms are now in communication with Germany, where our supplies seem to be

patented, and new art paper and violet-tinted effects are now on the market. Yes, it is a great deal of fun for all of us, adventuring in new fields."

SCHOOL JOURNEYS AND SCHOOL JOURNALISM

L. PAUL MILLER

EDITOR'S NOTE: Mr. Miller is director of science and visual education in Scranton, Pennsylvania. CLEARING HOUSE readers will enjoy Mr. Miller's description of the visits made by his pupils. F. E. L.

When classes in the City of New York are studying coal, the formation and mining of coal can be made real to the pupils on classroom screens. When classes in Scranton, Pennsylvania, are studying coal, not only can the mines be brought to the pupils by means of films, but the pupils can be taken to the mines.

Scenes and processes to which pupils cannot be taken are brought to them by means of photographic aids, such as opaque pictures, glass slides, film slides, and 35 mm. and 16 mm. films. These provide tremendous possibilities for visual instruction in all junior- and senior-high-school subjects, except possibly mathematics. Scenes and processes in the immediate vicinities of schools do not need to depend upon the medium of photography. They cannot be overlooked in the drafting of a comprehensive program of visual instruction. School journeys are, within their local limitations, extremely important visual aids.

AVAILABLE MATERIAL

Published material on school journey technique is not yet plentiful. Possibly the most helpful piece of work done in this field to date is "Visual Education and the School Journey," *Educational Monograph*, I, 6, Pennsylvania Department of Public Instruction, Harrisburg, Pennsylvania, prepared under the supervision of Dr. C. F. Hoban, State director of visual education. Interesting reports, also, have been appearing in recent issues of the *Pennsylvania*

School Journal, by Dr. Hoban, on school journeys as he found them conducted in other countries. These valuable contributions are doubtless accelerating the use of journeys, particularly in Pennsylvania schools.

The purpose of the present report is to summarize results of some recent experiments in the conducting of school journeys, especially with reference to the "follow-up." A plan which has been found feasible in a high-school science department in which nearly two thousand students are enrolled, and also at a college summer session at which a large class of student teachers practised use of visual aids, may be of service also in other schools. The plan is offered as a slight contribution in a field in which there is much work calling to be done.

STEPS IN CONDUCTING A SCHOOL JOURNEY

Summarizing principal steps in the conducting of a typical school journey, we find the layout to be something like this:

1. A need arises in connection with regular class work for first-hand information.
2. A time for the journey is fixed that is suitable both to the place visited and to the pupils;
 - a) Occasionally during class time, if the place is near-by, and the school administration is sympathetic. (Compulsory for all pupils.)
 - b) Usually outside of school hours. (Optional for all pupils in one or two sections

or to selected pupils from a number of sections.)

3. The teacher makes an advance trip to the place, if he has not previously been there.

4. Definite purposes for which the class trip is to be conducted are discussed with the pupils. It is usually wise to explain beforehand many of the details to be looked for during the trip.

5. Statements are prepared and mimeographed of the completion, multiple-choice, or true-false type, based on outstanding facts to be learned during the journey.

6. Pupils fill in or underline correct words on mimeographed sheets and take notes of their own during the visit.

7. Continuous and detailed explanations of essential points are given throughout the trip, preferably by the teacher. (Guides provided at many places tell either too little or too much.)

8. At the next class session there is oral discussion, of an informal nature, on the facts learned on the journey. Pupils refer to their mimeographed papers and individual notes. Every pupil makes corrections so that all of the statements on his report of the trip are correct.

JOINING JOURNEYS AND JOURNALISM

So far there is little in this procedure that is novel. A final "follow-up" is possible, however, that makes the journey additionally worth while. The pupils can prepare accounts of it for publication in their school paper and in local newspapers. The ones preparing the most readable "copy" enjoy the culminating thrill of seeing their work in print. Pupils who were not on the trip get the benefit of the findings, and the public gets some idea of what is going on in the school in these days of increased emphasis upon other sources of information than textbooks.

Ways in which school journeys can be made subjects for published news stories

may best be indicated by the following clippings. These accounts were prepared with careful supervision and copy reading by the teacher, by pupils of junior- and senior-high-school age, in the Bucknell University demonstration school last summer. They are clipped from local newspapers:

Pupils' Reports in Print

Did you ever throw snowballs in Lewisburg in August? Some of the demonstration school pupils in third- and fourth-period science and vocational-guidance classes are going to be able to do it when they visit the artificial ice plant in West Lewisburg tomorrow afternoon, to find out how ice is made by the use of heat. They have been told in class to find out what all of the steps in the process are, from the time coal is thrown into a furnace at the electric light plant, until large cakes of pure, clear ice are taken from tanks at the Elgin ice plant. They will also learn why all the ice in winter time is permitted to float down the Susquehanna, and then when ice is needed in the summer, water is frozen by use of machinery. The pupils hope to be able to explain just how it all works, after the trip.

Students in 8C- and 11th-year classes recently studied the process of making ice cream without ice, at the Bechtel ice-cream plant. They saw how gaseous ammonia was compressed and liquefied, and then passed into a jacket surrounding a ten-gallon freezer of ice cream. Here pressure was lessened, liquid ammonia went back to the form of a gas, and in doing so, took enough heat away from the cream to freeze it. They traced the gaseous ammonia back into the compressor, where the process began all over again. The class enjoyed the temperature, on a hot August day, of zero degrees in the room where the ice cream is left to harden. While at the Bechtel plant, they also saw how milk is pasteurized, by being heated at 145 degrees for thirty minutes, and then cooled to 50 degrees and less, by passing over pipes, first of water, and then of vaporized ammonia.

Gas Made from Water

The 9-B and 9-C general-science classes joined forces recently in a trip to the gas plant. The 11th-year chemistry class had inspected the plant a few weeks ago, and the 9th-year general-science students asked to go too. The scientists found that water is taken from the Susquehanna, turned into steam, and passed over hot coke. The carbon in the coke then goes with the oxygen in the water, and forms carbon monoxide. After the oxygen is taken from the water, the hydrogen is left. These

SCHOOL JOURNEYS AND SCHOOL JOURNALISM

two gases, carbon monoxide and hydrogen, are then mixed with oils in the carburetor, pass through the super-heater, are washed with water, and go into the large gas tank ready to be piped to our homes. The class learned that a pound of coke makes about 20 cubic feet of gas, or that about 1250 pounds are used to make 25,000 cubic feet, the capacity of the gas tank.

Priestley Home Visited

On the trip to Northumberland on Monday afternoon, the science pupils and teachers saw the interesting Priestley relics in the museum, erected by State College alumni on the grounds of the Priestley home. Flasks and retorts used by the world-famous scientist were viewed, as well as Priestley documents such as the deed to his property dated 1797, and his will, written in his own handwriting. The group then went to the Sunbury airport, to inspect a plane of the same type as Lindbergh's *Spirit of Saint Louis*. The class found this an interesting transition from the eighteenth to the twentieth century.

Eighth- and ninth-year general-science pupils have been studying Lewisburg's water, gas, and electricity supply systems for the past two weeks, and have found answers to a number of questions about these three common necessities. Answers were got, not from textbooks, but by visits to the offices of companies where information could be secured. Different pupils took different questions, and asked until they got the answers. The answers were then discussed in the science classes.

Water Supply Studied

Among facts learned, that were used in the science classes, were that the elevation of Spruce Run dam is 672 feet above sea level, the foundation of the Lewisburg standpipe is 564 feet, and the street level in Lewisburg is 460 feet. The standpipe was found to have a capacity of one million gallons of water. The entire water-supply system is capable of supplying five million gallons a day to all the territory covered by the water company, although the average daily consumption from both Spruce Run and White Deer is 2,500,000 gallons, so that it would be possible to supply about twice as much water to Lewisburg, Milton, West Milton, Watsonstown, New Columbia, and other places connected with the system, as these places are now using. The science pupils decided, however, that though there is plenty of water, they will not waste any.

Journeys Aid in Correlations

Special efforts were made at Bucknell last summer to train the student-teacher in the proper use of visual aids in junior- and senior-high-school teaching. While the slides, films, and class inspection trips were used largely in the demonstrating of science teaching, the technique used was one that is applicable to most other high-school subjects. Student teachers were instructed in the correlations of English, mathematics, and social sciences with the natural sciences, and made use, in those other subject fields, of data secured by pupils on their science class trips. This necessitated fewer school journeys, effecting economy in time, and avoiding unnecessary duplications of trips. Several successful experiments in correlation during the summer gave indication that the pupils were more interested and learned more readily when they were dealing simultaneously with a single topic, in several different classes. Facts concerning the local water-supply system, for example, were organized in science classes, there was practice in written and oral exposition on this topic in English classes, and calculations as to capacity of standpipe and water pressure at different elevations were made in mathematics.

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FROM THE INDUSTRIES

BAUSCH AND LOMB OPTICAL COMPANY
NEW YORK, N. Y.

Bausch and Lomb Optical Company, recognizing the great value of visual instruction and the need for improved instruments for this method of instruction, has bent every effort to the perfection of apparatus for lantern-slide projection, opaque-object projection, and film projection, both in dark rooms and in the daylight.

Among the many instruments which are made for visual instruction, there are several which stand out because of their demonstrated merit.

The model B balopticon (figure 13), a compact, efficient instrument for lantern slides only, is especially adapted to school-rooms, small auditoriums, Sunday-school-rooms, etc. Lantern slides are easy to make, are inexpensive to rent, can be easily colored, give a clearer and larger image at a greater distance than any other medium, and will not buckle or curl under extremes of heat. With these many advantages, combined with the fact that slide projectors permit detailed study of an unlimited number of subjects, it is not surprising that the model B balopticon, for lantern-slide projection only, has met with enthusiastic favor wherever it is used.

In the model LRM combined balopticon (figure 12), Bausch and Lomb offers an instrument which projects both lantern slides and opaque objects at distances up to eighteen or twenty feet. It is particularly adapted for the classroom. The material that can be projected in this manner is almost unlimited, and the cost is little. Almost any kind of opaque object—from book pages intact to geological fossils, and from the mechanism of a watch to an outline map—can be shown by this method either in a darkened room or under daylight conditions.

However, inasmuch as a great deal of il-

lumination is absorbed by the double reflection, a well-darkened room is best suited for opaque projection. In this instrument, recent improvements in the design of the opaque projector made possible a construction which permits brighter pictures than any other instrument and permits the use of larger pictures in lighter rooms. This increased and more uniform illumination has been accomplished by the use of a glass parabolic reflector behind the lamp, and chromium-plated metal reflectors around the object.

Realizing that possibly some of the thousands of users of Bausch and Lomb balopticons would want to use strip film in their visual instruction, Bausch and Lomb have designed an attachment for projecting still pictures and strip film which can be used with any of their balopticons (figure 15.) Therefore, it is not necessary for the user of one of the balopticons to buy a complete new unit in order to project this sort of material, but merely must purchase one of the attachments and make the balopticon serve an additional purpose. The printing of individual pictures on standard-width motion-picture film offers an inexpensive method of using pictures for both educational and entertainment purposes. Such strip film, with accompanying prepared lectures, can be obtained from the State and government departments of education, large manufacturers, and from other commercial, religious, and educational institutions and organizations.

As a further aid to visual instruction, Bausch and Lomb now produces the overhead projector (figure 2). Every user of the balopticon has undoubtedly, at some time or other, wished that he could face his class or audience and at the same time operate his own projector. This would eliminate annoying waits while slides are

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being changed by an assistant. He has also, no doubt, wished that the screen could be placed so that each person in the room could see it clearly and easily.

This new overhead projector, now offered for use on Bausch and Lomb balopticons, has several definite advantages:

1. The lecturer can face his audience and at the same time operate his own machine.
2. Changing slides is extremely simple and can be done while talking.
3. Slides are inserted right side up so that the lecturer sees them exactly as does his audience.
4. Features in the picture to be stressed can be pointed out with a pencil on the slide, instead of using a pointer on the screen.
5. The screen, being overhead, is easily visible to every one in the room.

This new attachment for balopticons is being accepted as a welcome means of facilitating the projection of lantern slides.

BELL AND HOWELL COMPANY
NEW YORK, N. Y.

The use of the motion picture in the schools is taken very largely as a matter of course today. It is a simple matter for the school to select equipment that will fully meet both classroom and auditorium needs. Through articles and advertisements in the educational press, the essential features of this equipment have been made a matter of common knowledge. Projectors and teaching films have been demonstrated at conventions. In practically every major town there are qualified dealers to help the school authorities in their motion-picture work, and in most States the schools can look to their university extension divisions and visual-instruction bureaus as sources of films, advice, and other aid.

Even as little as ten or fifteen years ago the pioneers in the field of school movies faced a very different situation. Most educators looked upon the motion picture as a

hindrance rather than an aid. They condemned it for the serious fire hazard it introduced and for its eyestrain and noise. Such films as were shown were considered a distraction rather than a contribution to good teaching.

There was a basis for this attack, because at first most of the films and machines that found their way into the schools were such as had outlived their usefulness in the theatrical field. They had met, more or less successfully, the conditions of the theatrical field, and to meet the criticism of the schoolmen there were strenuous efforts to duplicate, in the school auditorium, the conditions of the theater itself. This overcame, in a measure, the fire hazard and noise, and where the better grade of equipment was installed, furnished pictures equal to those shown in the smaller theaters.

This in turn raised a new set of problems. Expensive building alterations were made to provide the fireproof booths demanded by State laws and insurance regulations, professional moving-picture operators had to be engaged, and, what is most important of all to the educator, the motion picture in the school retained its inherently theatrical character as a means of distraction and entertainment, rather than of concentration and education.

Real relief from this impossible situation came with the advent of noninflammable film, in a narrow width unobtainable in the highly inflammable nitrate stock. This solved the question of fire hazard and made it possible to show such safety films right where the teaching has to be done—in the classroom.

The result was a fundamental change in the method of using films in the school, and in turn also in their character. Short subjects lasting 15 minutes, or even only five minutes or less, closely correlated to the subject under study, replaced the weekly or monthly one- and two-hour programs with

which, in the early days, the whole school from kindergarten up had been regaled.

The modern teaching film, still far from perfection but becoming more and more adapted to the needs of the school, is the legitimate child of the classroom projector and its 16 mm. safety film. The place of the motion picture, side by side on the library shelf with the indispensable text and reference books, is no longer disputed. Improvement in subject matter and methods of use are the problems today.

The Bell and Howell's Filmo projector represents a definite concentrated effort to solve the problems of classroom projection. It has already solved the chief problems of the past and promises solution of the many problems that will be brought by the future.

Similar considerations govern the development of a school projector. Here, too, the equipment must be built solely to do a certain job. Outlined below are some of the functions that must be fulfilled by a school projector—functions that can be performed only by equipment built with greatest precision and sturdiness. Only the highest standard of workmanship, material, and design can be tolerated in school equipment.

1. Rock-steady, flickerless pictures must be delivered in order to avoid eyestrain to pupils and teacher. To create the illusion of smooth, uninterrupted motion on the screen, at least sixteen pictures per second must be stopped in sequence before a lighted aperture and held there absolutely motionless for the longest practicable interval. A thousandth part of an inch slippage or side-play would be very objectionable from the point of view of eyestrain when magnified many times over on the screen. Early types of machines depended for their film motion on a pair of claws clutching at the film sprockets, when they failed to connect they misframed the picture and damaged the film.

One of the factors that accounts for

the rock-like steadiness of the Filmo projector is an entirely different, shuttle-finger movement, in which a single finely ground tooth that almost fills the film perforation, moves straight into the hole, guides the film downward just the right distance, then backs straight out, and moves up for the next cycle. Each of these four motions must be repeated at least sixteen times per second. Sixty-four precisely determined mechanical movements every second are made by this part of the projector. Yet the machine is so sturdily built that it will stand up for years, without the slightest mishap, in the hands of scores of different amateur operators. With the advent of sound and its projection speed of 24 frames per second, this performance is increased by 50 per cent without the slightest difficulty in the Filmo, its margin of safety proving more than sufficient also to meet this new condition.

Many other factors contribute to the final result of projection steadiness; the exclusive 9:1 shutter movement and ingenious side tension that eliminates nine tenths of the danger of surface scratches.

2. A school projector must deliver a brilliant picture—bright enough to offset the often inadequately shaded windows of the classroom, or to negotiate the 50-foot or even 100-foot throw of the auditorium. This projector solves this by a powerful system of direct lighting, and instantly interchangeable lenses readily copes with all ordinary throw-lengths.

3. The projector must be safe. So strong a light would generate heat sufficient to endanger film and operator were this not offset by the perfectly balanced air-blast fan that not only sweeps practically all the heat away from the film, but incidentally helps blow clean the aperture and operates a safety fire shutter which enables the projection of any single-film frame as a "still" picture, just like a lantern slide. This fea-

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ture, plus the ability to reverse the direction of the film while in motion by simply pressing a button, should the desired "still" point be inadvertently passed, doubles the effectiveness of the projector as a teaching tool.

4. The projector must be quiet in operation. A noisy machine distracts attention from the lesson, and hinders rather than helps the teacher.

5. A school projector must be simple to operate. The straight, wholly visible threading and operating of the Filmo is mastered within two minutes not only by any teacher but by the average pupil.

6. It must be flexible enough to master any classroom and ordinary auditorium situation. A Filmo can be readily carried anywhere and runs on A. C. or D. C. current. Instantly interchangeable projection lenses ranging from $\frac{3}{4}$ -inch to 4-inch focal length provide a proper sized image in almost any sized room. As figures 1, 3, and 4 show, it is run with equal facility from a special table, a one-arm study chair, or even on its own case. A late model is provided with a special school case which further broadens its base and facilitates a quick set-up.

7. A school projector must be sturdy and long-lived. School equipment has to last for years, possibly under harsh usage. Some of the earliest of these projectors are giving perfect service daily after seven years of use.

8. Finally, the projector must be designed not only to meet the immediate present-day requirements of school movies, but must be ready for the big developments that are to come. Thus far, every advancement in motion-picture technique has been made available to every Filmo owner. Movies in natural color can be shown, and now the first practicable "talkie" for the school-room once more uses the projector as its

basis. Any school owning filmo projectors can readily have them adapted for "talkie" presentation.

9. What is needed to meet the problems of this field is a far greater schoolward orientation on the part of manufacturers to serve school needs. The demand for better instructional films led to the development, for example, in the filmo library, of a long list of very short educational subjects prepared by Ditmars, Tolhurst, Pillsbury, and others. These have recently been supplemented by splendid school films produced by Ufa (Germany) with the collaboration of outstanding American educators. Over a hundred titles are available in silent version; about forty with sound. Several fine new Russian school films, imported through Amkino, have likewise been added.

Not only the projector, but the Filmo camera likewise is doing yeoman service in the schools. In San Diego, California, it is used by the visual-instruction department to make news, teaching, and scientific record films. Vocational schools in Milwaukee and Reading (Pennsylvania) use it somewhat similarly. This camera is the offspring of the famous "standard" Bell and Howell camera, through which the bulk of the world's studio pictures are shot. Bedrock simplicity characterizes this camera, yet it is competent to do the work of the most advanced amateur and professional research worker. The latest filmo camera embodies a three-lens turret, seven speeds to conquer any lighting and motion condition, and a critical focuser with twenty-five times magnification. From time to time highly specialized cameras are built to special order for the extreme vanguard of schoolmen who use the motion picture to record and facilitate their scientific studies, but regular models will be found quite ample to serve even far advanced needs.

KEYSTONE VIEW COMPANY

NEW YORK, N. Y.

The educational value of the material sold by the Keystone View Company is evident by the long history of that company in educational work. It claims the distinction of being the pioneer in the field of visual instruction.

More than thirty years ago, when stereographs were sold to homes only, outstanding teachers here and there, seeing their educational value, purchased collections for their own use in teaching. Long before that time, Mr. B. L. Singley, founder and president of the Keystone View Company, conscious of the educational value of the stereograph, instructed his photographers, traveling all over the world, to photograph at every opportunity the processes of industry, the life of the people, and other worthwhile aspects of the world having educational significance.

Stereographs were used in education originally and are still used because of the persistence of the idea that this most vivid of all pictures is preëminent among pictorial material in the process of building meaningful backgrounds for educational activity. It became clear, very soon, however, that some one must organize stereoscopic material in such a way that it would be easily available for the use of teachers. This need was responsible for the first steps which were made about 1904 in the development of so-called "sets" of stereographs for educational use. Out of many experiments and a great deal of educational advice came the first "600 set" which was issued by the Keystone View Company in 1906 in an experimental form. The present 600 set, entirely made over and brought up-to-date in 1927 and being constantly revised, is a direct descendant of this first 600 set issued in 1906.

As the use of stereographs developed,

there became evident the need for some method of socializing the values which the individuals of the group got from the stereograph. The stereograph itself, affording as it does a strongly individualized type of use, was not adapted to use in class or recitation periods. Out of this need came the demand for duplication of the same views in lantern-slide form so that material could be presented to the group as a whole.

From this grew the combination idea, which, stated briefly, is to use stereographs individually as reference material and then at later class or recitation periods to reproduce in lantern-slide form the stereoscopic views, previously studied, for socialized discussion. The argument in its favor becomes more valid as educational leaders everywhere emphasize such modern aspects of education as the importance of the individual, the importance of research work, the importance of building vivid backgrounds, the importance of making an intensive study of a limited number of facts, and the importance of making easy the socialization of the reactions of individuals from their personal study and reading. Recently combination sets of stereographs and lantern slides have been published on primary work, on American history, on nature study, on biology, and, more recently, units on almost every aspect of the social sciences.

As the use of stereographs and lantern slides has progressed, it has become more and more obvious that, in order to popularize the use of these visual aids, the opportunities for use must be so large that such use may become habitual instead of occasional. Only the outstanding teacher will use material that comes up for use only occasionally. If lantern slides and stereographs are to be well used, their use must be daily and, therefore, habitual.

In order to meet this need, the Keystone View Company has recently issued the J. Paul Goode lantern-slide maps, a large

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series of song slides, slides on English and American literature, slides on art, units in a large number of technical subjects, special units in general science, specially edited units in the social sciences, and more recently the very interesting equipment for making homemade lantern slides.

The homemade-lantern-slide material is the most recent answer of the Keystone View Company to progressive educational needs and demands. The possibility of the teacher preparing her own material for her own use and the further possibilities of enlisting the participation of the pupils in the preparation of personal and room material is another aspect of the use of visual aids which appeals to educators everywhere.

A. J. NYSTROM AND COMPANY
CHICAGO, ILL.

A. J. Nystrom and Company specializes in visual instruction in the social sciences. At the present time they have 86 maps or charts for courses in European and American history and American citizenship. There are 45 maps in the Webster-Knowlton-Hazen European series, 21 maps in the Sanford-Gordy American history series, and 20 charts or maps in the Hughes American citizenship series. They are all the same in size and general character, and are interchangeable in mountings. Their large size gives them excellent classroom visibility, and the type and color treatment stresses the important essentials. In history the social and economic phases are emphasized as well as the political aspects. In the citizenship series, charts showing sociological and economic relationships and vocational guidance find a place, as well as the strictly civics charts which stress governmental organizations and functions. The maps may be purchased singly or in sets in any selection—in chart heads, wall cases, or folded form. The Company also imports the best available history maps and pictures from European publishers.

To meet the need in the field of geography, A. J. Nystrom and Company offers several series. In the political map field, in descending order of size, the company offers the Imperial, Whitbeck-Finch, American geographers, and educational series. A recent special map shows the world politically on Boggs Eumorphic Equal-Area Projection. The advantage of this map is that it shows all parts of the world without any distortion in relative size. These maps stress political units and large cities and may be used either for pupil reference or for classroom demonstration. The color and type treatment give them a high rating both from an aesthetic and a utilitarian standpoint.

For geographical study is offered the Atwood regional-political series, with supplementary maps for comparative map studies. The main maps have a political background but are colored according to natural regions, showing the young rugged mountain, the old worn-down mountain, the upland or plateau, and the lowland regions. Appendant to the main maps are supplementary maps showing relief, rainfall distribution, population distribution, and land utility with mineral resources. With the six types of maps in one field of view comparative studies are possible and the problem of teaching geography facilitated. In addition to the regional maps in the series there are world maps showing winter and summer rainfall, temperature, vegetation, population, and occupations.

In the physical map field A. J. Nystrom and Company have two outstanding series—the Kuhnert relief-like series, and the physical-political series. The Kuhnert series shows relief realistically as a plastic-like picture through colors and shading, while the physical-political series is colored hypsometrically according to elevations.

The need for economic maps is met by two series of which Professor V. C. Finch,

of the University of Wisconsin, is the author. One series deals with the products and industries of the United States, and the other with the agricultural and mineral products of the world, including special maps of rainfall, population, land use, and transportation.

A visual aid of great utility is the outline blackboard map. Blackboard maps may be had in varying sizes of the United States, world, continents, and many of the states. No visual equipment for geography would be complete without globes. These may be had from A. J. Nystrom and Company in varying sizes, both simplified and for detailed reference.

In the subject of physiology A. J. Nystrom and Company have an outstanding life-size series—the American edition of the Frohse, which were amplified by the master anatomical artist—Broedel. These charts in lifelike colors show the parts of the human body in sufficient size and detail for use in the largest classrooms.

In other biological subjects such as botany, zoölogy, bacteriology, histology, heredity, it is necessary to look to European publishers, especially German, for charts. A. J. Nystrom and Company have arranged with the leading European publishers to distribute their biological charts to American schools, and it is now possible to obtain them in large size for practically any phase of biological work. English keys are provided in most cases.

The company also imports, in addition to the foregoing material, visual aids in other subjects, such as agriculture, languages, religion, astronomy, geology, pathology, and anthropology.

RADIO CORPORATION OF AMERICA
NEW YORK, N. Y.

That sound motion pictures are destined to play an important part in education there is not the slightest doubt. Interest in this

method of visual instruction has become widespread. No exhibit at any of the several national and State gatherings of educators held during the past year has attracted the attention that was manifested in the exhibits of the manufacturers of sound reproducing equipment. At the annual convention of the National Education Association, held during the summer at Columbus, Ohio, the demonstration of portable sound reproducing equipment was attended by capacity audiences at every performance.

For the conveying a personality to the far corners of the earth, the sound motion picture has unique possibilities. Some months ago Dr. Nicholas Murray Butler, president of Columbia University, was invited to deliver his customary annual address to the members of the Los Angeles alumni association. Finding it inconvenient to go to Los Angeles at the time, Dr. Butler prepared his address and recorded it at the RCA Photophone Gramercy studio in New York City. H. Boyce-Smith, a Columbia alumnus and member of the Los Angeles alumni association, carried the film from New York to Los Angeles, and on the evening of the annual banquet, employing RCA Photophone portable sound reproducing equipment, Dr. Butler made the closest possible approach to a personal appearance, by appearing upon the screen and talking to the former members of his great flock. Needless to say the latter accepted the alternative with enthusiasm. They saw and heard Dr. Butler as well as if he had appeared before them in person.

One of the first of the major institutions of learning to see the possibilities of the sound motion picture in visual instruction was Harvard University, which has installed a completely equipped sound-recording and sound-reproducing studio. RCA Photophone apparatus is employed and many subjects have already been completed.

In a recent treatise upon the sound mo-

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tion picture, Dr. Julius Klein, Assistant Secretary of Commerce of the United States, said in part:

Most of us are so entranced with the entertainment phases of the device that we have given insufficient thought to its other possibilities—the helpful uses to which the new talking pictures may be put in the interests of better business. We have, it is true, been startled into some degree of recognition by the recent press accounts of the use of talking pictures by certain of our most distinguished scientists to demonstrate experiments in a most illuminating and convincing way. We gained some conception, then, of how the materials and processes of experiment, magnified, simplified, and clarified by means of “close-ups,” may be made vastly more vivid and effective than they would be, even in the actual classroom—and how, along with the indispensable oral comment of the eminent instructor, they can be multiplied countless times and distributed to students and general audiences throughout the world. The educational vistas that are thus opened up would have been simply inconceivable a few short years ago.

SPENCER LENS COMPANY
BUFFALO, N. Y.

The Spencer Lens Company has recently contributed much to the advancement of the cause of visual instruction by the development of new picture material and the perfecting of projection equipment for use in projecting still pictures in the classroom.

In the field of glass-slide projection the Spencer classroom lantern gives the classroom instructor a powerful instrument in very compact form, with a varied range of uses. It has a nonheat-conducting carrying handle, a pedestal base with both horizontal and vertical tilts, a hinged lamp house for easy access to lamp and condensers, and reading apertures for manuscript reading. This lantern has a varied range of uses in that it may be used at either long or short range by the addition of an extra objective and not requiring any change or rearrangement of the condensers.

The lecture table lantern is a very recent development by the Spencer Lens Company and is the result of a constant demand on the part of college and high-school profes-

sors and instructors for a lantern to be used under daylight conditions, at the front of the classroom and with the projected object visible and right side up to the operator. The lecturer faces his class at all times, operates the lantern himself, and points to and discusses items of interest on the slide with his students—all without turning away from his class.

The projection of opaque material, such as photographs, printed matter, colored plates, post cards, etc., has lately been gaining in use in the public schools and colleges.

In the past the use of opaque material for projection purposes has been seriously retarded by the slow development of proper projection equipment to overcome the lack of illumination due to the necessity of the use of light reflected from the object rather than passing directly throughout the projection object as in the case of glass slides. Two new opaque projectors developed this year by the Spencer Lens Company are designed to secure greater illumination and avoid overheating the object.

The model Q classroom opaque lantern has one five-hundred-watt illuminant, so placed with interior reflecting mirrors and large lenses that maximum illumination is obtained on the screen image while heating of the machine is reduced to a minimum. Provision is made for installing a cooling blower at small additional expense if desired. The working range of this equipment is from nine to twenty-six feet from the screen.

A new three-bulb high-power machine, designated as Model W, meets the need for a very brilliant screen image, with the equipment operated at considerable distance from the screen. The glass slide part of this model is a separate unit placed within the machine. The opaque illuminants are two five-hundred-watt bulbs. A cooling blower is a standard part of the equipment.

The development of the film slide in the

last few years by Spencer has made available a very large assortment of picture material, well edited and classified by subjects. The film slide, which makes use of a strip of 35 mm. film, permits the placing of still pictures on the film with captions arranged in any given sequence. This calls for as careful editing as a textbook and gives the busy teacher a picture "textbook" to use in her visual-education work. Film-slide projection machines and attachments for using film slides on ordinary stereopticons are so constructed that the strip may be turned forward or backwards, or one picture allowed to remain on the screen as long as desired, thus permitting a wide variation in the use of the pictures, but giving the instructor the benefit of the proper sequence of pictures required for the presentation of the subject.

The film slide is a set of still pictures placed on a standard width, noninflammable film. These pictures are used in the same manner as glass slides, except that, because of the low cost of the pictures, it is not necessary to use one picture for many different purposes, which is deadening to the interest of the student and leads to using the pictures for so-called picture study, which is something quite different from developing a subject with the aid of screen pictures.

In addition to a very complete library of film slides manufactured by Spencer covering all of the geographical divisions, including related industries, transportation, and national parks, nature study, health and hygiene, elementary science and agriculture, primary subjects, Spencer is now working on the visualization of various high-school and college subjects. The first complete high-school and college subject visualized is in a department where reliable visual material is greatly in demand. The Spencer film-slide set on Latin, prepared by Dr. Helen H. Tanzer, of Hunter College, New

York City, has just been completed and is ready for distribution. This set is made up of 20 film slides of about 40 pictures each, making a total of 800 pictures available. They cover such subjects as the family, costumes, the children, city life, country life, etc. In addition there are two complete film slides on "The Story of the Aeneid," visualizing this epic poem.

All of the Spencer line of projectors, including all models of glass-slide and opaque lanterns, may be obtained in combination, so that film slides may be projected, as well as the standard material for which the machines are built. An inexpensive attachment may be obtained for use on any standard make of stereopticon.

TRANS-LUX DAYLIGHT PICTURE SCREEN
CORPORATION

NEW YORK, N. Y.

The Trans-Lux "Little Wonder" uses both opaque material and stereopticon slides. Its construction is such that it will project postcards, sketches, book and magazine illustrations, opaque objects in the 6 by 6 inch size, or any fraction thereof. If larger material is used, it can be passed over the aperture at the back of the machine and all of it eventually projected.

"Little Wonder" also provides for the projection of lantern slides, the projector being provided with a little handle underneath which permits the operator to change from stereopticon to opaque projection or back, as occasion requires, by a simple turn of the wrist. There is a 500-watt lamp with a prefocal base, so no adjusting of lamps is necessary.

There are four essential factors in projection: (1) portability of equipment; (2) automatic cooling, so that the material and the hands of the operator are not burned; (3) easy operation; (4) economical cost. "Little Wonder" weighs only 28 lbs. and is provided with handles that are always

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cool. The operation is simplicity itself. The back is provided with a groove which will take Trans-Lux postcard holders, horizontally or vertically, and cards 6 by 6 inches on which the material can be mounted. Since a very large part of projection material is used on the spur of the moment, it would naturally not be mounted for projection. We have, therefore, taken care of this contingency by providing what are called loose-leaf holders. These holders will hold material flat for projection. Books may be held in the machine and a support is provided for the heavier ones.

Most of the instructors have one of the students operate the machine for them. The projector is placed in the front part of the room, nearer the windows and pro-

jected diagonally to the class. The pictures are projected through the screen to the students. The windows which permit daylight to penetrate the distance of projection—the distance between the projector and the screen—or permits daylight on the screen should have their shades drawn.

This projector is priced at \$160.00 less 10 per cent to schools. It is made especially for use with our Trans-Lux Screens, so either No. 1 or No. 2 (24 by 30, or 30 by 36 inches) is recommended. A complete projection unit for opaque material and stereopticon slides, with screen, may be had for either \$169.00 or \$179.00 net f. o. b. factory, depending upon the size screen used. (See figure 14.)

DEFEND THE PUBLIC SCHOOLS AGAINST MILITARISM

RICHARD WELLING

EDITOR'S NOTE: *Mr. Welling (Harv. '80, N.Y.U. School of Education 1911) is a practising lawyer and saw active service as a naval officer in both Spanish-American and World Wars. Under his able leadership the Self-Government Committee, Inc., has carried on a program of publicity and promotion of the vitalization of civics by some form of pupil coöperation since 1904. The CLEARING HOUSE invites views favoring and opposing many practices carried on in the schools. Perhaps some readers may wish to reply to Mr. Welling; if so, the columns are open.* P. W. L. C.

Fifty years of education in Germany under the war-minded Junkers led to a sword-rattling attitude; not exactly our educational aim today, is it?

Here in America we are at the crossroads with two kinds of schools, one where the teacher is an autocrat and the students act like privates in the ranks; the other where the teacher is a friendly leader, all hands coöperating.

If children do not learn to bear responsibility and to coöperate with their teachers in school, they are not learning how to live in a democracy.

What mysterious pull has the autocratic school? The answer is not hard to find.

The Association of Military Colleges and Schools of the United States under the heading "Answering a Modern Need" says:

The growth of military training in America is one of the most romantic chapters in the history of American education. Where one school used military training a century ago, today over two hundred schools and colleges are using it . . . the whole régime captures a boy's imagination . . . (!)

Culver Military Academy, in its catalogue, says:

"The military system exerts a keen fascination . . ."

(Of course little boys love to march to a drum!) A drum gives him a big ego and with it too often a chip on his shoulder.

A nation with a chip on its shoulder is that much slower to arbitrate.

Seriously, is *this* not the danger—at an early age a boy's ideals are formed on an outworn European military standard and his own creative formation of his own character is halted, in fact handed over to a military autocrat while he learns with servility to take orders under a code which has no place in education for democracy.

A recent critic of West Point, M. Bedinger, librarian there for several years, speaking of the goose step at the academy points out that every effort has been made

to perfect a system of training that will crush any attempt at self-expression on the part of the cadet. They aim to destroy every trace of independent thinking and seek to cast him in the form of the traditional army officer—a man cherishing an attitude towards life that belongs to the dark ages.

Major Kerns, formerly acting physician at West Point, himself has said:

West Point is a fertile field for incipient nervous disorders. No system can take a group of young men, dress them alike, teach them alike, drill them alike, and grind them through the same machine . . .

West Point with all its prestige sets a standard for other military schools, and it is not a comforting reflection to be told that "where one school used military training a century ago today over two hundred schools and colleges are using it . . ." West Point doubtless is necessary, but keep its standards out of the public schools.

And yet does any one doubt that our fifty-seven captains of industry (rulers of our country, suggested by Mr. Gerard) approve West Point methods? These men, engrossed in their own pursuits, may easily overlook wrong tendencies in education.

The very word "uniform" is at odds with the psychology of progressive education. Your average citizen admires a thousand men in a thousand uniforms, with a thousand gleaming muskets, a thousand

feet in shining boots stepping out in unison to the beat of a drum. Tell him the show is silly and in no way necessary to success in modern warfare, which will be controlled by science, engineering, and aeronautics, etc., and he will pretty surely retort that it is fine character discipline and teaches obedience as nothing else can. It is almost useless to argue with those who are fascinated by this sight of marching men, the human partridge dance.

I quote from a prize-winning essay in *Life* on "Bigger and Better Wars":

War liberates all kinds of stifled emotions; puts color and rhythm and adventure back into the world. You're running a power loom day after day in a lint-filled room. Suddenly you're out on the street marching to the *roll of the drum*, the flags waving, and the sun is shining, and the crowd is cheering. Cheering you!

The drum is barbaric. Good-by brains when marching to a drum. The Indian war dance is executed to the beat of a drum. Savage populations are aroused to Voodoo sacrifices by the beating of drums.

If it seems impractical to abolish the drum, remember again that war is now an engineering problem. The Panama Canal, Catskill Aqueduct, and other vast works were carried through by armies of engineers who needed no drum. Neither deploying, nor ambushing, nor "going over the top" are done to the beat of a drum. Let us have no more military music used for recruiting and directly tending to glorify war.

We are just now beginning to realize that the drab work of digging trenches and lying for weeks and months in the mud necessitated a very drab-looking soldier, and in various parts of the country now, ten years after the war, the demand arises for full-dress uniforms. Representative Rogers introduces a bill for Congress to appropriate a million dollars to buy rich blue woolen cloth for full-dress uniforms for Uncle

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Sam's soldiers. In New York State similar steps are under way with our State Militia. Nothing helps recruiting like a handsome full-dress uniform. It seems an almost necessary deception to make a show of glamor, tinsel, music, and marvelous alignment in marching, ignoring the plain facts that none of these baits by which the civilian is first attracted will last one hour after he is ordered to the front. The very women who are at heart most nearly pacifist are the worst offenders and can scarcely notice a man in civilian clothes when once his brothers don uniforms.

There seems to be a real fear that the average American youngster cannot be trusted to comprehend the meaning of martial law, the meaning of soldiering, camp discipline, and military orders generally. History teaches that the free liberty-loving citizen is one of the quickest to grasp the meaning of military discipline. Grote dwells at length on this in describing the retreat of the ten thousand Greeks in Persia. Consider also the Battle of Dalmy and our own Bunker Hill where regular troops were mowed down by raw recruits.

I speak from my own experience as a naval officer in Cuban waters in 1898 and in command of Montauk Naval Base 4 in the late war. I found that a five-minute talk with a miscellaneous gathering of untrained civilians, from all walks of life, made it clear to them that the time for questions, explanations, individual viewpoints, and all varieties of moods, personal preferences, and idiosyncrasies was at an end. Obedience, stark and bald, was the one requirement. So well and quickly was the lesson learned that there were occasional mishaps as where a green young officer failed to bring his company to a halt, having marched them down on a dock, and, as the drum kept beating, into the water they marched, accoutrements and all.

Soldierly obedience is one of the cheapest

of all things to teach. It is a backward step from the first. "I'll do the thinking," said an officer at Camp Upton to a private who had been a school teacher, head of a department in one of our high schools—this in response to a practical suggestion respectfully advanced by the junior who was not on duty at the time.

I welcome proficiency in marksmanship, horsemanship, flying, chemistry, seamanship, navigation, ballistics, whatever you will, but when the public-school children are ordered out to march, the psychology is "war," and it has no proper place in the public schools. Seventeen thousand Boston cadets from the various high schools recently paraded through the streets of Boston and received prizes on their perfect marching—as though geometrically perfect alignment in the streets of Boston had anything to do with modern war.

A reformed West Point and Annapolis we must have, and militia in every State (I, myself, helped organize the Naval Militia in New York State), but let our public schools keep clear of such training, especially the marching with its insidious war psychology.

We read that the Land Grant Colleges being required to furnish military training and having overemphasized the silly end of it, the marching, have so far brought the subject into disrepute that the United States Attorney General has given his opinion that such courses may be optional. College students, unlike our public-school boys, cannot be fooled into thinking that infantry drill has much to do with modern warfare and Dean E. M. Freeman of the University of Minnesota, in a recent article in *School and Society* points this out and calls for more up-to-date and advanced scientific training.

The following answer given by *The American Legion Monthly* to the question "What is a Good American?" illustrates the danger of military mindedness. It finds

the requisite of good Americanism is the quality of minding one's own business and says not a word about coöperation and civic duty. "Mind your own Business; Do your Job Well. . . . In the last analysis it was the side which had the most dollars which came out ahead, and it must always be so." What about the Greeks at Thermopylae, and the American Revolution! In other words when the soldier returns to civil life released from military orders and adopts for his creed "every man for himself," he thus contributes to making the country so rich that it will surely win the next war!

That such teaching should go forth unchallenged to several million ex-soldiers

(who fought to make the world safe for democracy!) is the best illustration of the evil consequences of war that has ever come to our notice. After having been under military discipline necessitated by war the reaction is to raw brutal individualism.

Military education does not teach young people to share responsibility at school. They learn to take orders from the man on top, and in later life this means the political boss.

Military training is undemocratic . . . and educationally wholly unwise.—JOHN DEWEY.

Against military training in our schools I have protested . . . —John H. Finley, former New York State Commissioner of Education.

OTHERS SAY

FLOYD E. HARSHMAN

The National Art Award for High Schools

His portrait bust entitled *Buddy* won the first award in a national contest for high-school students for Alfred Frye of Woodward High School in Cincinnati, Ohio.

Writing of this achievement, *Ohio Schools*, September 1930, says, "One of the outstanding contributions of modern secondary education is the nurture it gives to the creative capacity of its charges. Training of special talent such as this boy possesses is no longer the peculiar province of a private, specializing institution."

By-Conference on Educational Guidance

On October 24 and 25 at Northwestern University a program was sponsored by the School of Education and the University Personnel Department which had to do with educational guidance. In speaking of the program, a director of the conference said, "Educational guidance in its various phases constitutes one of the most difficult and at the same time one of the most promising problems in modern education."

The opening session of the conference was devoted to orientation for the group regarding the purposes of, and need for, more guidance work in the secondary school. The second session was devoted to explanations of some of the more workable programs, for instance, the one at South Orange, New Jersey, and the one at New Trier Township School, Winnetka, Illinois. The third session was devoted to the various guidance tech-

niques in use by representative high schools and junior high schools and an address on Articulation of Guidance Work by President Raymond A. Kent of the University of Louisville.

The September issue of the *CLEARING HOUSE* was devoted to advisement and guidance, and this program in the Middle West shows that the same matter is receiving great attention there. We may look for some very definite and lasting results from this nation-wide effort to stimulate thinking and planning towards the improvement of the guidance program.

High-School Training for All is American Doctrine— by William John Cooper, United States Commissioner of Education

Whenever the secondary school begins to enroll over the 10 per cent required for leadership, it has no point under 100 per cent at which to draw the excluding line. If we are to care for all the children of all people during the critical period of adolescence, what are some of the more challenging problems involved?

In the first place, the attitude of teachers towards pupils must change. The failure of a pupil must be considered first of all a failure on the part of the school.

Consequently, much study of pupil capacities and interests is involved. New devices for pupil adjustment need be perfected.

In the second place, new curriculum materials will be required. Our present curricula represent

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units designed to meet the needs of a certain 10 per cent plus additions usually of a so-called "vocational" nature. The courses of study must be considered from such points of view as effective citizenship, wise parenthood, rich use of leisure, conservation of physical and mental vigor, etc.

In the third place, mental hygiene will take fully as large a place in the school as bodily hygiene. The adolescent of today stands in greatest need of instruction in "Know Thyself." Out of the fears, hatreds, jealousies, and other complexes resulting from poor adjustment to a highly complex society come many of today's crimes against persons and much needless suffering which never manifests itself in criminal act. In the secondary schools of tomorrow will be trained psychologists ready to help young folks live normally.

In the fourth place, administration will become the handmaid of the educational system rather than its master. There will be various types of secondary-school units: junior high schools, senior high schools, junior colleges, three-year, four-year, five-year, six-year, and even eight-year institutions depending upon the size of the community, the diversity of population, and the supporting wealth. There will be full-time day schools, part-time day schools, evening schools, and clinics for those who attend no school.

In the fifth place, the educational system will adapt itself to the needs and conditions of the pupil rather than compelling the pupil to conform to a rigid system designed for the average pupil. The full-time pupil headed for a lawyer's career will be no more important to such a school than the part-time student employed in the factory, and the pupils whose financial status or whose peculiar capacities make full-time wage-earning employment necessary or desirable will have the service of the school in directing their health activities both physical and mental, in suggesting courses of reading, and guidance and placement.

These, I feel, are some of the changes which must come to pass if America's great social experiment of secondary-school work for all the people is to succeed.

The Paris Pact in American High Schools

Educators appear to be taking seriously the responsibility of this country towards the Paris Peace Pact. They seem to believe that, if this country is to help make the Pact effective, an active supporting public opinion must be developed and maintained. That teachers and the schools have a large part to play in the formation of this opinion is recognized by the outstanding educational leaders. The last meeting of the National Education Association in Columbus, Ohio, last July, recommended that the Pact be taught in the schools. Dr. William

John Cooper, United States Commissioner of Education, has said: "Since the Peace Pact was proclaimed by President Hoover it has been a part of the law of the land. Our schools are therefore under obligation to teach it."

Last year the National Student Forum on the Paris Pact encouraged and helped the high schools of the country to make a serious study of the Pact. Its work was so heartily welcomed by the principals and teachers that between fifteen and sixteen hundred schools were enrolled with the Forum, and in the participating classes there were over 122,000 students. As a matter of fact, many schools not enrolled carried on a study of the Pact in social-science and other classes.

The National Student Forum is in charge of a large committee of over three hundred leading educators. It has the endorsement of the United States Commissioner of Education, who says: "The Forum has proved its value as a motivating factor." The superintendents of public instruction or commissioners of education of nearly all the States are supporting the Forum and are members of the committee in charge. Practically all the major peace organizations are coöperating in its work. Arthur Charles Watkins, a member of the staff of the National Council for Prevention of War, is acting as director. Dr. Sidney L. Gulick, of the Council's Commission on International Justice and Goodwill, is the vice chairman, and Dr. Philander P. Claxton, former United States Commissioner of Education, is the chairman.

The Student Forum is ready to help any high-school principal by providing pertinent factual materials for an all-sided study of the Pact by his classes. It has bibliographies, reading lists, syllabi, and teaching outlines. The teaching units were prepared and successfully used last year by various teachers in different parts of the country. High-school libraries may also obtain, upon application, certain free books and pamphlets that present many aspects of the subject and related topics. As an incentive to study and write on the subject of making the Pact effective, the Forum offers a national prize of a trip to Europe next summer to the student who prepares the best five-hundred-word essay. Facsimiles of the Pact are offered as prizes for the best papers prepared in schools and in the States. Last year a leading student of the Jefferson High School, Portland, Oregon—Ray Steubing—won the national prize. He traveled in Europe for six weeks and spent two weeks in Geneva attending sessions of the Assembly of the League of Nations. The essay writing for prizes is optional with schools that enroll with the Forum. Specially successful students will be eligible for membership

in an International Relations Study Tour which the Student Forum will organize to spend eight weeks in Europe next summer.

Readers of the JUNIOR-SENIOR HIGH SCHOOL CLEARING HOUSE can help this work by calling the attention of their local high-school principals to the facilities of the Student Forum. We would suggest that they send to the Forum Office, 532 Seventeenth Street, N. W., Washington, D. C., for a printed announcement of the project and personally present it to the principal, or that they send the principal's name to the director of the forum, who will forward to him a copy of the plan for study.

To Meet Newer Ideals and Forces¹

The curriculum, both of high school and college,

should be built so as to prepre students for specific objectives in business and professional life.

Both school and college should give increased attention to personnel and vocational guidance.

There should be available for educators complete reports indicating demand in business and professional life for students who are in course of preparation for various types of pursuits.

There should be renewed insistence on thorough and disciplined training of the mind.

The aim should be to isolate and develop the gifted student.

¹ From the monthly publication of *Ohio Schools*, September, 1930.

BOOK NOTES

Conducted by the American Library Association

THE PROGRESS OF INTERNATIONALISM

This World of Nations, by Pitman B. Potter, is so logical and unimpassioned that one might be slightly irritated, but at the same time, decidedly envious of the mental poise of the author.

In the foreword we are told that present economic and political evils should be corrected through existing institutions—that institutions should be adapted to new demands by a process of evolution rather than revolution. The author then proceeds to build up his argument by completely ignoring the possibility of overthrowing the present economic order as Soviet Russia has done.

One other point he makes before starting on the book proper—"that nations act upon the motive of self-interest and not of altruism."

Each reader will find the chapter that most enlightens him. The high spot for many will be the chapter on Diplomacy. "We hear much concerning popular control of diplomacy. The evidence indicates that the populace doesn't care a whoop about controlling its diplomacy. When trouble comes the diplomat is blamed. In

normal times he gets no support. The public attitude towards the diplomat and the consul is nothing less than stupid." But until there is better international legislation we cannot dispense with diplomats, is the author's opinion.

The style is informal and popular. Each chapter is followed by a bibliography defining the method of each writer—scholarly, anecdotal, radical, or conservative.

The chapters build up a perfect sequence from private world organizations through international politics and law, treaties, diplomacy, international arbitration, administration conferences, and federation, to the League of Nations. The author believes that it is quite possible that the United States will be a member of the League by 1937.

Few of us know all that this book sets forth. I recommend it for those who wish a background for the stirring international events that are recorded in our newspapers and periodicals.

M. W.

Four Exceptional Novels Selected from *The Booklist*, Published by the American Library Association.

BOOK REVIEWS

Twenty-Four Hours, by Louis Bromfield. New York: Frederick A. Stokes Company, 1930. 463 pages. \$2.50.

From New York's wealthy old families, from the self-made business class, and from the underworld of night clubs and criminals the author has assembled an oddly assorted group whose lives were strangely entangled by the happenings of one day. The characters are portrayed with admirable skill and the story is interesting, though often prolix in style.

Angel Pavement, by John Boynton Priestley. New York: Harper and Brothers, 1930. 494 pages. \$3.00.

A long leisurely novel of many characters. Mr. Golspie descends from the Baltic upon a shabby office in the quiet little street called Angel Pavement, just off the main business thoroughfares of London. There he puts new life and excitement into the office staff, and not only they, but their remote and scattered homes, families, and friends are portrayed here with skill, humor, and under-

standing. At last Mr. Golspie departs as suddenly as he had arrived. The book has something of the flavor of Dickens.

Mosaic, by Gladys Bronwyn Stern. New York: Alfred A. Knopf, 1930. 397 pages. \$2.50.

Aunts and cousins and grandchildren of the widespread Rakonitz and Czelovar families of the *Matriarch* and *A Deputy Was King* appear again in this novel. The central figure of the vast family mosaic is Berthe, cousin of the original matriarch, who, with no children of her own, spent her exuberant energy managing the lives of her relatives.

Miss Mole, by Emily Hilda Young. New York: Harcourt, Brace and Company, 1930. 293 pages. \$2.00.

The quiet, unsensational appeal that many readers found in *William* marks this story of Miss Hannah Mole, companion to old ladies and housekeeper for a minister's ill-assorted family. A humorous, sophisticated novel of English small-town life.

BOOK REVIEWS

Opportunities for Vocational Training in New York City, compiled by the Vocational Service for Juniors, 122 East 25th Street, New York City, 96 pages.

This volume is indispensable to counselors and social workers in the New York City metropolitan area, for it gives detailed information concerning the vocational courses which are offered by public and private schools in this area. This volume is a revision of a previous publication, *Directory of Opportunities for Vocational Training in New York City*.

F. E. L.

The Knowlton Work-Book in American History, by Daniel C. Knowlton. New York: The Century Company, 1930, 323 pages.

This workbook offers a year's work in senior-high-school American history. Seventeen carefully selected work units, followed by specific problems, map exercises, references, questions, and new-type tests offer abundant opportunity for very intensive as well as extensive study in the field. The author states that the problems and the general plan of the book have developed under actual teaching conditions, that its use is not dependent upon any

particular text or the size of the library, and that the book furnishes all the necessary laboratory material with the exception of the textbook, atlas, and paper.

The objectives of each unit of work seem to be well chosen and seek to touch every important phase of American history from the period of discovery and exploration to the problems which have confronted the United States since the World War. The problems which accompany each unit set forth more specific aims and seek to lead the student to a better appreciation of the history of the American people. The work as a whole seems to be well planned and should be welcomed by teachers of American history in secondary schools. Teachers should find the map exercises, the suggestive questions, and the new-type tests practical and worth while.

C. L. W.

American, by FRANK B. LINDERMAN. New York: World Book Company, xi+324 pages. \$1.60.

No white man has ever thoroughly known the Indian. Hence such a work as this, the story of an Indian chieftain's life, told by himself, is a great and timely addition to the literature of the pioneer period of American history. Plenty-coups, chief of the Crow tribe, is probably the only living Indian

chieftain who has experienced the old life of the plains Indian. A genuine record of his life is therefore a precious document. From the beginning of the story, which deals with the chief's boyhood life and training, to the end, which coincides with the passing of the buffalo, the pictures of Indian life and character are vivid and convincing. For boys and girls of junior- and senior-high-school age the book cannot be too highly recommended.

A. D. W.

The Technique of Study, by CLAUDE C. CRAWFORD. New York: Houghton Mifflin Company, vii+353 pages.

Here is a book rich in specific, practical directions that should be of direct use to students. The content has been selected as a result of several years of investigation into the precise nature of the difficulties confronting students and the most effective methods of overcoming them. In many cases these methods were evaluated in the light of scientific research. In its organization and approach, the book has the advantage of attacking directly the difficulties that are known to exist, and of offering specific directions as to the manner in which these difficulties should be met.

A. D. W.

Industrial Hygiene for Schools, by J. F. WILLIAMS and D. OBERTENFFER. New York: McGraw-Hill Book Company, xiv+280 pages.

So many of the health practices of mankind have arisen out of an agricultural background that living amid the new problems presented by the factory system has become difficult. These new conditions must be met by new guides to health. This is the problem faced by the authors of *Industrial Hygiene for the Schools*. They seek not only to indicate the health problems in modern industry, but to suggest guides for living that may be helpful to young men and women entering upon industrial careers.

The relation of health to success, general health hazards in industry, the prevention of disease, recreation and leisure-time activities, hygienic and sanitary provisions in the house, health service in industry—these are some of the topics dealt with in a specific, practical, detailed way. The book is full of information that should be of value to students and readers in general. It is clearly written, well illustrated, and well indexed.

A. D. W.

Figure Construction, by ALON BEMENT. New York: The Gregg Publishing Company, xi+123 pages.

This excellent treatise on drawing from the life is the outcome of the need of finding some method of teaching life drawing whereby students of costume design might gain a sufficient knowledge of the human figure to meet the requirements of their craft. The methods presented are based on four assumptions.

1. It is easier to draw the figure in action than in the half action.
2. Except when seen from the front, the action of the body may be expressed in nearly every instance by two lines—a convex and a concave curve.
3. The beginner should be instructed in drawing the figure as a whole before he studies the detached parts.
4. The time employed in making each stroke in a drawing should be limited.

A series of lessons is presented. The human figure is drawn in profile, then the head, then the arm and hand, always in accordance with the assumptions listed above. The illustrations, of which there are many, consist of the work of Professor Bement's students and offer convincing evidence of the efficacy of his method.

A. D. W.

New Junior Business Training, by FREDERICK G. NICHOLS. New York: American Book Company, xii+388 pages.

Professor Nichols has provided for junior-high-school teachers of commercial subjects a valuable and comprehensive guide in the introduction of young pupils to the fundamentals of business practice. The purposes of the course of study for which this book is the text are six in number.

1. To prepare boys and girls to handle their personal business affairs.
2. To acquaint boys and girls with the many types of business work and with the importance of selecting a suitable kind of business.
3. To encourage interest for more advanced types of business training.
4. To give pupils experience in different kinds of business work.
5. To ensure pupils a better understanding of business relationships and responsibilities.
6. To give some training for such positions as may be open to pupils who leave school before completing the full business training program.

The titles of various chapters—thrift, budgeting, personal account records, business forms, filing methods, how to carry money when traveling, simple business law—are indicative of usefulness of the book both for those for whom business is a

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vocation and for those whose business activities are incidental to their vocations.

A. D. W.

Qualities Associated with Leadership in the Extra-Curricular Activities of the High School, by GEORGE C. BELLINGWRATH, Ph.D. New York: Bureau of Publications, Teachers College, Columbia University, 1930, 57 pages.

The author has attempted to discover to what extent certain qualities are present in those high-school pupils who have been elected by their school-mates to positions of leadership in the school's extraclassroom activities; also, to what extent the same qualities are found in those who are not so elected. He further attempts to find to what extent these qualities are related to such elected leadership.

The study was purposely limited to the members of the senior classes in five cosmopolitan high schools in and near New York City. It was confined to the seniors because in most schools seniors seem to assume most of the positions of leadership.

After listing the various extraclassroom activities for each school and listing the persons who were leaders in the various activities, the investigator proceeded to study certain traits of the leaders to discover what qualities had been responsible for their being chosen to take various positions of leadership. The group of leaders was handled as one particular group and a group of nonleaders was selected in each school in order to find to what extent the same qualities were present in them.

In tracing the differences between the two groups, the investigator found that the leaders received higher marks in their school subjects than the nonleaders. The figures were based upon the first and last semesters which the pupils spent in school.

By using the New York rating scale for school habits, the author found that, in general, the pupils elected to positions of leadership rated higher in school habits than the nonleaders.

The general conclusions of the study seem to indicate that there is a larger number of boys than girls among the elected leaders and that there is a positive difference as to age and social background which is altogether in favor of the boys who are elected as leaders. In other respects, there seems to be little difference between the boys who are elected to leadership and those who are not so elected.

The greatest differences seem to have been found in the study of girls who were leaders and girls who were not leaders. Girl leaders seem to be younger, taller, heavier, make higher school marks, have

better school habits, and come from better homes than do girls who are not leaders.

This study is well worked out and the materials are so arranged that they are easy to understand and easy to follow. The conclusions are carefully drawn and placed so that they are immediately available to the reader who wishes to know at once the results of the study.

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LATIN—FOURTH YEAR

By HARRY E. BURTON & RICHARD M. GUMMERE

How fortunate it is that in the final year of high school Latin study comes the grand processional of the Latin poets—Vergil, Ovid, and, in their simpler phases, Catullus, Tibullus, Martial, and Horace. But this is a challenge as well. Advanced high school students, superior subject matter, and superior teachers demand a superlative book. It must be a soundly chosen anthology, a scientific textbook, an informing commentary. LATIN-FOURTH YEAR meets this challenge. A part of The Climax Series, edited by Ralph Van Deman Magoffin. Ready in January.

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The study is a distinct contribution to the fund of knowledge, inasmuch as there is still much difference of opinion as regards the values to be derived from the various activities carried on by the pupils in the secondary school.

F. E. H.

News Service Bulletins, School Edition I, 3-50, Carnegie Institution of Washington, 1926-1929.

The Carnegie Institution of Washington began publishing in 1926 a series of *News Service Bulletins* for use in schools. The bulletins consider in simple language accompanied by excellent illustrations various science activities of the Institution. The edition of these bulletins is limited to 1000 copies and has been prepared to test the idea as to whether or not the bulletins have educational value. To this end 1000 schools have been placed on the mailing list for free service. The policy of future publication will be determined upon the basis of comments received from those using the bulletins. Sample copies of current issues are available upon request.

These bulletins are of great service to the science and geography teachers and it is hoped that the Institution will decide to publish them in quantity for school use. The following titles chosen at random will give some idea of the nature of the bulletins: *Exploring the Depths of Space*, *What Attracts Insects to Flowers?*, *Gravity on the Earth and Moon*, *Pictures of the Past in Asphalt*, *The Measure of Man's Vital Energy*, *Birds as Heat Engines*, *The Carnegie's Cruise in the North Atlantic*, *Colonel and Mrs. Lindbergh Aid Archaeologists*, and *Further Light on the Structure of Matter*.

C. J. P.

Motion Pictures in History Teaching, by DANIEL C. KNOWLTON and J. WARREN TILTON. New York: Yale University Press.

The authors of this book have studied the *Chronicles of America Photoplays* as an aid to seventh-grade instruction. The purpose of the study was to determine, if possible, how much added interest in the subject of history was created by the motion pictures, how much they contributed to the learning of fundamentals, how much they enriched the course, and to what extent they helped students to retain what they had learned.

Two groups of seventh-grade pupils were compared. The control group studied their history without the aid of the pictures; the experimental group was given opportunities to see them. Ap-

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BOOK REVIEWS

appropriate measurements were taken before and after the course of study by means of specially devised tests. The results have been carefully interpreted in the light of statistical methods, and are indicative of a considerable advantage to be gained from the use of the films.

The experimental group, for example, gained more enrichment than the control group, and without loss in standardized progress; the experimental group also showed better retention, and exhibited greater interest as evidenced by participation in classroom discussions. The authors have made a valuable contribution to our understanding of the possible usefulness of the motion picture as an educational tool.

A. D. W.

Organization and Administration of Supervision, by ERNEST O. MELBY. Bloomington, Illinois: Public School Publishing Company.

The literature of supervision, in form of systematic treatises and scientific studies, has lagged far behind the practice. The author of this study finds quite a discrepancy between the theory of supervision as presented in the universities and its organization and usages in the schools. Superintendents of schools, instead of delegating supervisory functions to their principals and supervisors, do quite a good deal of general supervising themselves. By their practices, as revealed here, it might seem that they either do not trust their principals with this function or that their classroom visitation is not intended to be supervisory in nature. Supervisors are found to have more real power to direct school policies than have elementary principals. Special supervisors practically dictate method and subject matter to their teachers whom they seem to think incompetently prepared in the special subjects. These special supervisors exercise supervision largely through demonstration teaching. Yet they themselves are found to be largely untrained in the theory and principles of general supervision. Many building principals are likewise untrained. This presents a confused situation of which professional schools of education should take due note. The assumption that supervisors of teachers of both general and special subjects are in need of supervision would, if well founded, seem to be based upon the further assumption that the supervisor has superior training—an assumption hardly borne out by Professor Melby in his study. This leaves a rather weighty parcel on the doorstep of teacher-training institutions and presents pabulum for serious reflection to those who direct administrative policies in education. It is the old story—the

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teacher-preparing agencies and the employing agencies need to get together and talk it out.

J. O. CREAGEE.

Rural Community Life, by LEE ORA LANTIS. New York: American Book Company, 1930, viii+375 pages.

The author states that the aim of this book is to discuss social conditions in rural communities and to offer suggestions for improving the standard of living of rural citizens. Chapters are devoted to communications, Tenancy and Rural Welfare, Problems of Marketing, Rural Health and Sanitation, Recreations, Education, and other agencies

and problems with which the people of the rural communities are especially concerned.

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